5-2013

Fat Talk with Parents and Weight Bias in High School and Undergraduate Students

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Fat Talk with Parents and Weight Bias in High School and Undergraduate Students

An Honors Thesis

Presented to

The Faculty of the Department of Psychology

Bates College

in partial fulfillment of the

requirement for the degree of the

Bachelor of Arts

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Lewiston, Maine
March 22, 2013

Acknowledgements

Professor Low A heartfelt thank you for supporting me in pursuing my interests and leaving your area of expertise for a bit, for grappling with the different scales in the study, for meeting with me on weekends and in evenings, and for being a calming influence on me. I feel so lucky to have had you as my thesis advisor.

Craig Jipson Thank you for being so welcoming as you invited me into your classroom. This study would not have been possible without your kindness and enthusiasm. I enjoyed every minute I spent with you and your students. I extend a sincere thank you to your students for their cooperation as well.

Brian Pfohl Thank you for sharing your skills and expertise in the programming and technology world. You're a true life saver. Not to mention your comedic relief, which was (and still is) greatly appreciated.

Professor Boucher As my first Psychology professor and academic advisor at Bates, I will always be grateful to you for sparking my curiosity and passion for the field. I looked forward to and enjoyed every one of my classes with you.

Linds My best friend and sister, thank you for your cheerleading throughout this project. "I carry your heart with me (I carry it in my heart)" –E. E. Cummings

M&D Thank you for always pushing me to do my best, for believing in me, sometimes even more than I believed in myself, for supporting and trusting me in my decisions and bolstering my self-confidence, for reminding me to relax and to have some fun when I would forget, for making me want to come home every now and then, and for loving me unconditionally.

SB To the farthest star and back. Thank you for your never-ending emotional support, for your patience, for the much appreciated humor and smiles with which you provide(d) me, for the thesis snacks, and for being my pelican.

To the friends I have been blessed with throughout my time at Bates. Thank you all for the laughs, great times, and support.

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Abstract

Weight bias is found in people of all ages, beginning from age three and lasting into late adulthood. Recent research has demonstrated that mothers' negative attitudes towards overweight and obese persons influence their children's attitudes towards overweight persons (Holub, Tan, & Patel, 2011). This study sought to expand on these findings by examining whether both mothers' and fathers' attitudes towards overweight persons are associated with bias in their high school and college-aged children. This study also explored "fat talk" as a mechanism through weight bias is transmitted from parents to children. One hundred and twenty-seven high school, 94 undergraduate students, and 82 undergraduate students' mothers and fathers completed measures on weight bias and fat talk. Women participated in fat talk with parents more than men. Fat talk with mothers appeared to be important in the transmission or perpetuation of weight bias to their high school-aged children. Fat talk was less important for undergraduates, but parental weight bias, particularly toward teenagers, was associated with their children's negative attitudes toward obesity. This study has potential implications for both understanding the origins of weight bias and for the development of weight bias reduction interventions.

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Introduction

Obesity, or having a body mass index (BMI) of 30 or higher, has become one of the major health concerns in the United States. In fact, Ford, Zhao, and Tsai (2011) found that the prevalence of obesity among United States adults aged 20-74 years rose from 13.4% in 1960 to 30.9% in 2000. Similar trends have been reported among children. In 2008, about 16.9% were found to be obese, and 31.7% were classified as at risk of overweight or overweight (Rooney, Mathiason, & Schauberger, 2011). Despite this increase in adult and childhood obesity, there does not appear to be an increase in the acceptance of larger body size (Hansson, Karnehed, Tynelius, & Rasmussen, 2009). Weight bias, which may be conceptualized as negative beliefs about and attitudes towards persons on the basis of their weight, is on the rise (Gumble & Carels, 2012).

It has been estimated that the prevalence of weight discrimination has increased by at least 66% in the past 10 years (Andreyeva, Puhl, & Brownell, 2008). Research has also demonstrated that weight bias against overweight and obese children was stronger in 2001 than it was 40 years ago (Andreyeva et al, 2008; Latner, Simmonds, Rosewall, & Stunkard, 2007). Weight bias, which is likely a precursor to weight discrimination, has been found to start in children as young as the age of three, and continues throughout childhood, adolescence, and adulthood (Cramer & Steinwert, 1998). In fact, beginning at age three, children believed "chubby" individuals had less friends, did more poorly in school, and were less liked by parents (Kraig & Keel, 2001). Parents may be influential in perpetuating weight bias and discrimination in their children, as it has been shown that parents are most responsible for transmitting certain values, stereotypes, and attitudes to their children (Chen, Liu, & Li, 2000). In fact, Holub et al.

(2011) found that mothers' anti-fat attitudes toward children were associated with their own children's stereotypes about weight. However, the impact of fathers' attitudes has not been explored, nor has the method of transmission of anti-fat attitudes.

Weight Bias, Discrimination, and Consequences

Overweight and obesity are associated with a diverse range of negative stereotypes, including perceptions that overweight persons are unattractive, unlikable, weak-willed, lazy, unhygienic, and alienated from their sexuality (Schupp & Renner, 2011). A study by O'Brien et al. (2008) found that observers' negative attitudes are both explicit and implicit, and they are highly prevalent in almost all domains of life, including employment, interpersonal relationships, health care and medical settings, and education. It has further been found that this bias against overweight and obese people is increasing and that children as young as three have reported weight bias and stereotypes (Cramer & Steinwert, 1998). That is, negative attitudes toward the overweight appear to be increasing at a rate similar to obesity.

These increases have implications for individuals who are overweight. O'Brien et al. (2008) demonstrated a clear link between anti-fat attitudes and discrimination against obese individuals. For example, one study of 400 physicians found that obese patients elicited feelings of discomfort, dislike, and reluctance to treat (Klein, Najman, Kohrman, & Munro, 1982). Another study by Persky and Eccleston (2011) found that medical students demonstrated more negative stereotypes, less anticipated patient adherence, worse perceived health, more blame on the patient for medical conditions, and less visual contact with patients for obese patients than non-obese patients. Such negative attitudes and beliefs seem to correspond with behaviors. A study by Kristeller and Hoerr (1997) investigated over 1,200 physicians' attitudes toward overweight people, intervention practices, and referral strategies for obese patients. They found

that physicians were somewhat ambivalent about managing and treating their obese patients, and that they were unlikely to refer obese patients to a weight loss program. Furthermore, another study reported that 67% of physicians did not feel primarily responsible for managing their obese patients' weight (Pratt, Nosiri, & Pratt, 1997). Negative experiences in health care settings can have a large impact on the health of those who are overweight, as they may avoid preventive care or treatment.

Negative attitudes, biases, and discrimination have the potential to lead to even greater problems and concerns for overweight and obese persons. Medical researchers have acknowledged that the stress associated with an unfavorable social trait such as excess body weight is harmful to psychological and physical health (Schafer & Feraro, 2011). Ashmore, Friedman, Reichmann, and Musante (2008) found a relationship between overt weight-based discrimination and psychosocial maladjustment, including body image disturbance, binge eating, and psychological distress. Weight-based stigma has also been found to be a risk factor for depression, low self-esteem, and other mood and anxiety disorders (Puhl & Heuer, 2010). It has more recently been demonstrated that such stress leads to worsened physical health outcomes for these stigmatized individuals (Puhl & Heuer, 2010). In particular, experiencing overt weight bias may contribute to weight gain and metabolic abnormalities (Gee, Ro, Gavin, & Takeuchi, 2008).

There has also been a focus on the psychosocial outcomes of obesity and obesity stigma specifically pertaining to children and adolescents. Research demonstrates that obesity is certainly a risk factor in terms of psychological and emotional wellbeing, as well as health (Bromfield, 2009). Particularly during childhood and adolescence, overweight children are often the victims of weight-based bullying and teasing (Warschburger, 2005). For example, a study

found that obese children, compared with average weight children, were teased at least three times more often (Neumark-Sztainer, Story, & Faibisch, 1998). Another study suggested that overweight adolescents were more socially excluded than their average weight peers, less likely to be identified as friends, and more likely to have unpopular friends (Strauss & Pollack, 2003). In order to cope with teasing and social marginalization, children most often reported social avoidance (Warschburger, 2005). Avoidance of peers, family members, and social interactions, though, may lead to developmental setbacks in forming supportive and intimate relationships and social skills. For example, one study found that in a sample of adolescents seeking treatment for obesity, their parents reported that 58% of the girls and 50% of the boys experienced significant problems with their peers (Braet, Mervielde, & Vandereycken, 1997).

In addition to disturbances in social development, research suggests that obesity in children and adolescents is associated with a number of psychological and emotional problems, including low self-esteem, anxiety, depression, and depressive symptoms, as well as health issues (Warschburger, 2005). Warschburger (2005) found that between 29 and 49% of obese children had clinically relevant scores in the aforementioned areas. Another study reported that in a sample of extremely obese adolescents, 70% met the DSM-IV criteria for at least one mental disorder diagnosis, more specifically: "42.6% for mood disorder, 40.4% for anxiety disorder" (Britz et al., 2000). Research on the effects of childhood obesity on self-esteem during childhood has been less conclusive. However, it has been found that being overweight in childhood predicted future low self-esteem (Brown et al., 1998). Also, certain factors related to being overweight, such as weight-based teasing, have been found to mediate the relationship between overweight in children and low self-esteem (Davison & Birch, 2002). In terms of health, being overweight as an adolescent has been linked to increased rates of disordered eating

behaviors, relative to average weight adolescents, including chronic dieting (Puhl & Latner, 2007). Puhl and Latner (2007) reported that overweight girls also engage in more vomiting and diet pill usage, and that some of this unhealthy eating and dieting behavior may be attributed to the weight-related teasing they endure.

Overweight status in children has negative consequences for physical activity as well. Research demonstrates that negative comments about weight during physical activities were related to overweight children's negative attitudes toward sports and lower participation in physical activity (Faith, Leone, Ayers, Moonseong, & Pietrobelli, 2002). Such an effect is particularly harmful, as it may help to perpetuate children's weight problems, creating a cycle of discrimination and unhealthy habits that contribute to obesity. Therefore, although obesity and overweight may not directly affect some aspects of mental and physical health, bias and discrimination associated with overweight appear to be causally linked to negative outcomes. Because of the aforementioned harmful and lasting effects, it is important to better understand the nature of weight bias and its perpetuation in society.

Gender and Racial Differences in Weight Bias and Stigmatization during Childhood

There is conflicting research on gender and racial differences in children and adolescents' attitudes toward obesity and weight-based victimization. Some studies examining weight bias among children demonstrated that boys and girls did not differ in their attitudes when presented obese figures (Cramer & Steinwert, 1998; Tiggemann & Anesbury, 2000). However, one of the first studies to examine weight bias in children found that girls reported disliking obese children more than boys did (Richardson, Goodman, Hastorf, & Dornbusch, 1961). In addition, Kraig and Keel (2001) demonstrated that girls rated both overweight and average weight figures negatively, whereas boys rated only the overweight figures negatively, and rated the average

weight figures more positively. This suggests that the girls place more importance on and internalize the thin ideal to a greater degree than boys, and that even average weight may not be acceptable to some girls. More research is needed to determine the nature of gender differences in weight bias.

In terms of experiencing weight bias and discrimination, some research indicates that girls and boys may not differ in the frequency with which they experience weight-based teasing (Warschburger, 2005). However, it has been shown that boys and girls may experience different kinds of victimization and discrimination. For example, in one study obese boys "reported more overt forms of weight-based victimization, such as teasing and bullying" and obese girls "reported more relational forms of victimization, such as exclusionary…treatment" (Puhl & Latner, 560). Research is mixed here, as well, as some studies indicate that girls do in fact experience more weight-based victimization than boys. A large study of children found that overweight girls reported more weight-based teasing and discrimination than overweight boys (Eisenberg, Neumark-Sztainer, & Story, 2003). The current study seeks to provide more insight into potential differences between adolescent men and women in their attitudes toward obesity.

In general, research on the relationship between race/ethnicity and attitudes toward overweight and obesity is limited. However, a recent study found that African American girls reported more positive attitudes toward obese peers than both African American boys and White boys and girls. This is consistent with the hypothesis that overweight is more accepted within the African American community than among Whites (Neumark-Sztainer et al., 1998). A similar finding was reported by Crystal, Watanbe, and Chen (2000), who found that Japanese students expressed more positive attitudes toward obese peers than American students. The current study also seeks to examine racial differences in attitudes toward obesity.

Parental Weight Bias and the Transmission of Weight Bias to Children

Past research suggests that parents are the most influential sources of value and belief transmission to children (Steinberg, 2001). It has been argued, though, that mothers and fathers play different roles in the socialization of their children (Chen et al., 2000). Three theories about the transfer of prejudices from parents to children have been posited (O'Bryan, Fishbein, and Ritchey, 2004). The same-sex model holds that children are more likely to adopt the prejudices and intolerances of the same-sex versus opposite-sex parent. If this theory were supported in the current study, it would be expected that adolescents' negative attitudes toward obese persons would correlate more strongly with the attitudes of their same sex parent. Second, the parental equivalent model asserts that mothers and fathers influence prejudice and stereotypes in their children in similar ways, and that parental attitudes coincide (Cole & Cole, 1989). Last, the differential effects model asserts that mothers and fathers influence their children's development of attitudes and values within different spheres or realms (Fallon & Bowles, 1997). For example, it is likely that mothers influence their children's attitudes toward weight and beauty ideals more than fathers. A substantial amount of research supports this last model (Chen et al., 2000). In fact, a number of studies have demonstrated that, "both male and female adolescents generally feel closer to their mothers than to fathers, talk more with their mothers," and "are more likely to rely on them for decisions" (O'Bryan et al., 411, 2004). The differential effects model of parental transmission was evidenced by a study by O'Bryan et al. (2004), which studied parents' and children's prejudice and stereotyping for minority and stigmatized groups. After controlling for the adolescents' grade, sex, and the family's socioeconomic status, the researchers found that the teen's prejudice against overweight people was affected by mothers' but not fathers' negative attitudes.

Although surprising, recent research has demonstrated that for many obese people, "the worst stigma experiences occurred at home with family members (e.g. parents, spouses, and other relatives)" (Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). In addition, family members have been reported as the most frequent source of weight bias, and such experiences increased as overweight individuals' weight increased (Puhl & Brownell, 206). That is, many parents possess the negative attitudes toward overweight and obese persons that pervade Western society. These biases appear to extend to attitudes about one's own children (Pierce & Wardle, 1993). In fact, Puhl et al. (2008) found that about 46% of an obese sample reported weight-related stigmatizing experiences from their family and friends. Furthermore, the authors suggested that weight-related comments made by family and friends might be perceived as even more hurtful than comment made by strangers (2008). Children are not immune from parental weight bias. In a study of adolescents, 47% of overweight girls and 34% of overweight boys reported weight-based teasing from family members (Neumark-Sztainer et al., 2002). Such findings demonstrate the importance of studying weight bias in interpersonal relationships as well.

In addition, parents may be unintentionally transmitting weight bias to their children. A study conducted by Adams, Hicken, and Salehi (1988) suggests that mothers' verbal behaviors may play a role in the socialization of stereotypes and weight bias. That is, when asked to tell a story about a picture of an overweight child, a child of normal appearance, and a handicapped child, mothers used more negative characteristics to describe the overweight child than the normal and handicapped children. Children may therefore be internalizing these negative stereotypes and attitudes from their parents' verbal cues. This is further supported by a study on children and parents' reports of parental influences on children's weight concerns, body

dissatisfaction, and dieting behavior (Haines, Neumark-Sztainer, Hannan, & Robinson-O'Brien, 2008). Children perceived more direct (comments to child about weight, encouraging child to diet) and indirect (dieting, comments about own appearance and weight) weight-related behaviors from parents than parents reported. Furthermore, children reports of their parents' weight-related behaviors and comments were more strongly associated with body dissatisfaction, weight concerns, and dieting behaviors than parent reports. This suggests that children may be relatively sensitive to their parents' behaviors and comments and, may pick up on some of the more "subtle nuances" (Haines et al., 786, 2008) of their weight-related comments and actions.

More recently it has also been found that mothers' anti-fat attitudes directed toward children were associated with children's stereotypes about overweight people. The authors suggested that mothers' dislike of overweight children might be communicated in the comments they make (Holub et al., 2011). It may be that mothers who are more concerned about becoming overweight discuss such fears in front of their children, which in turn may then contribute to negative attitudes towards overweight and obese people. However, the ways in which parents express fear of becoming fat or negative attitudes to their offspring, thereby transmitting stereotypes and weight bias, have been neglected in research.

Most of the extant research has explored self-reported attitudes or stereotypical perceptions in parents and their correlation with biases in children. Although parental attitudes and children's biases are clearly linked, the explicit mechanisms by which anti-fat attitudes are transmitted have not been explored in previous research.

Fat Talk

Arroyo and Harwood (2012) define "fat talk" as, "ritualistic conversations about one's own and others' bodies (e.g., "I'm so fat!" "No you're not, I'm the one who is fat!" (167). The

content of fat talk is varied, but it generally involves self-criticism, the desire to be thinner, and concerns about eating and exercise behaviors. It is almost always negative, and it may also include verbalizing fears of becoming overweight as well as comments about other people's weight and one's own weight (Arroyo & Harwood, 2012).

Recent research suggests that social comparison processes motivate much of this behavior, and that fat talk is an insidious form of social pressure that most often occurs between peers (Corning & Gondoli, 2012). In fact, it has been argued that, "having a stronger tendency to socially compare directly predicts fat talk" (Conring & Gondoli, 2012, 528). Furthermore, as a woman's concerns about body image increase, the likelihood that she will engage in fat talk also increases. As Corning and Gondoli (2012) proposed, this effect intensifies with greater tendencies for social comparison. Their study also found that individuals engage in social comparisons in domains that are personally salient (2012). Therefore, if one joins in social comparisons regarding weight, body size or shape, exercising, or eating behaviors, it is likely that one places value and importance on weight and appearance. It is reasonable to speculate that negative attitudes toward overweight and obese persons might be associated with participation in social comparisons regarding appearance and fat talk.

Fat talk has become normative for young girls and women, as one study reported that 93% of women have engaged in fat talk with friends (Salk & Engeln-Maddox, 2011). Women use such conversations to form bonds with other women, obtain social validation, and to create an outlet for negative emotions (Nichter, 2000). However, this "bonding" has been found to have negative consequences for both those who are exposed to it and for those who participate in it. Negative attitudes about one's body appear to be somewhat contagious (Stice, Maxfield, & Wells, 2003). Salk and Engeln-Maddox (2012) demonstrated that when a healthy weight person

complains to another similarly sized person about feeling fat, it sends a message that the other person should also feel such body dissatisfaction, and that excess body weight is unacceptable. This affirms the belief that body image is important, and may perpetuate weight bias and negative attitudes toward overweight and obese persons. For example, when young women heard a confederate criticize her own body, they were more likely to rate their bodies more negatively than when a confederate talked about acceptance of her body type (Tucker, Martz, Curtin, & Bazzini, 2007). A number of studies have also examined the negative psychological effects of fat talk. There is consistent evidence that listening to fat talk results in a significant increase in body image disturbance, drive for thinness, eating pathology scores, and depression (Stice et al., 2003; Warren, Holland, Billings, & Parker, 2012; Arroyo & Harwood, 2012; Corning & Gondoli, 2012). It is also associated with lower self-esteem (Stice et al., 2003).

Most research on fat talk has focused on college-aged women. Generally, fat talk has been conceptualized as a social phenomenon that is prevalent in cultures idealizing thinness (Corning & Gondoli, 2012). However, a handful of more recent studies have demonstrated that men experience body dissatisfaction, too, just for different reasons (Cash 2002; Olivardia, Pope, Borowiecki, & Cohane, 2004; Smolak, Murnen, & Thompson, 2005). As a result of the drive for muscularity and the internalization of western cultural ideals, men may engage in strategies to increase body muscle and size (Payne, Martz, Tompkins, Petroff, & Farrow, 2011). Due to the current perception of the "ideal male body," men with lower BMIs are at greatest risk for body dissatisfaction. More research is needed on gender differences in fat talk and the motivations driving participation in fat talk.

Although men have body image concerns, US women report having heard fat talk and feel more pressure to engage in fat talk compared to their male counterparts (Payne, Martz,

Tompkins, Petroff, & Farrow, 2011). Despite the fact that men do not report as much pressure to engage in fat talk as women, they do report exposure to such conversations (Payne et al., 2011). It may be then, that men engage in a different kind of "fat talk" that may be distinctive, and emphasizes size and muscle mass. For example, men discuss with their peers muscle building and being "lean" more often than women discuss dieting with their friends. However, men do not discuss the desire for muscularity more often than women discuss general appearance (Payne et al., 2011).

Fat talk does not seem the most appropriate label for men's "body talk" since concerns center mostly around muscularity and increasing one's size, which may be a type of muscle dysmorphia (Olivaridia et al., 2004). Fat talk in men and women suggest different end goals, as women seek to lose weight and conform to the Western thin ideal, and men seek to increase muscle mass and reduce body fat. Regardless, men's engagement in discussions about muscle building and leanness will be referred to as "fat talk" in the present study, as it fits the definition of negative talk about one's body. Furthermore, for lack of a better measure that examines the kind of fat talk in which men *and* women participate, the NBT scale (Engeln-Maddox et al., 2012) will be used in the current study. It is suggested that future research develop a distinctive term and assessment strategy for the type of "body talk" in which men engage.

Current Study

There is an abundance of research on weight bias and negative attitudes towards overweight and obese persons. However, far fewer studies have examined how such attitudes, stereotypes, and biases are passed from parents to their children. A recent study by Holub et al. (2011) studied the ways in which mothers' anti-fat attitudes may influence the development of obesity/overweight stereotypes in their children. This study sought to replicate and extend the

Holub et al. study (2011) by exploring both mothers' and fathers' attitudes toward obesity and their influence on weight bias. Some previous research has implicated fathers in anti-fat attitudes, and fathers and mothers are not always similar in their views (O'Bryan et al., 2004). For example, O'Bryan et al. (2004), found that the mother-father correlation for anti-fat attitudes was very weak (r = .06).

In addition, rather than examining the impact on *children's* stereotypes, I studied *high school and college students'* attitudes in order to gain insight as to whether parents' influence continues past childhood. Some studies suggest that weight bias initially increases during early childhood while leveling out in adolescence and adulthood (Latner & Schwartz, 2005). On the other hand, some research has demonstrated that weight bias increases through childhood into adolescence (Lerner & Korn, 1972). It is not yet known whether adolescents' weight bias correlates with parents' beliefs. In addition, it has not been determined how negative attitudes towards overweight and obese persons are passed from parent to child. I explored "fat talk" as a potential vehicle through which weight bias and anti-fat attitudes are transmitted. Here, too, it made sense to include men in the investigation, as current trends indicate that men also feel pressure to engage in fat talk (Arroyo & Harwood, 2012). It is plausible that exposure to fat talk is one mechanism through which children adopt weight bias from their parents. Both adults and adolescents are aware of fat talk, in which excess weight is acknowledged as a negative trait.

I hypothesized that both parents' negative attitudes towards overweight and obesity would be associated with their high school and undergraduate-aged children's overweight stereotypes. However, it may be that the influence of mothers' anti-fat attitudes and weight bias is greater than that of fathers', as research suggests that, "women place greater importance on their own body image than do males" (O'Bryan et al., 2004, 423). In this same line of thinking, I

believed that women would report greater participation in fat talk with mothers and fathers than men. The literature suggests that women and men engage in different kinds of fat talk, and the Negative Body Talk scale (NBT; Engeln-Maddox et al., 2012) used in the current study emphasizes thinness rather than muscularity. Because of this I believed that it would make sense for women to score higher on the NBT. It was also hypothesized that high school and undergraduate students' reports of fat talk with their parents would be associated with negative attitudes towards overweight and obesity. However, I believed that mothers' "fat talk" would be reported more than fat talk with fathers, indicating that mothers play a larger role in the transmission of weight bias through fat talk than fathers. Last, it was predicted that scores on a measure of fat talk would be correlated with parents' weight bias and with children's anti-fat attitudes.

Method

Participants

Study 1. Participants included 127 high school students (72 females, 55 males) from a high school in Maine. The high school students ranged in age from 13 to 19 years old (M = 14.66, SD = 0.95). The majority of the students identified as White (81.9%), 8.7% as Black/African American, 5.5% as Native American/American Indian, 3.1% as Asian, and 0.8% as Hispanic. Most students (63%) participated on a varsity, junior varsity, or freshman athletic team. The mean body mass index (BMI) of the sample was M = 22.70 (SD = 4.41).

Study 2. Participants included 94 first year undergraduate students from Bates College in Lewiston, Maine (61 females, 33 males) and 82 first year undergraduate student parents (46 females, 36 males). The students ranged in age from 18 to 21 years old (M = 18.54, SD = 0.67). The parents ranged in age from 44 to 62 years old (M = 52.9, SD = 4.07). The majority of the

students identified as White (80.9%), 10.6% as Asian, 5.3% as Black/African American, and 4.2% did not specify. The majority of parents identified as White (81.7%), 11% as Asian, and 6.1% as Black/African American. The mean BMI of the undergraduate sample was, *M* =22.70, *SD* = 2.88, and the mean BMI of the parent sample was *M* = 25.10, *SD* = 3.79.

Measures

Parents' Weight Bias. Mothers and fathers completed Crandall's (1994) Anti-Fat Attitudes (AFA) Questionnaire, which has a total of 13 statement items (Appendix B). Participants respond using a Likert-type response format (0 = *very strongly disagree*; 9 = *very strongly agree*). Higher scores indicate greater anti-fat attitudes. The measure includes three subscales: dislike, fear of fat, and willpower. The subscale "dislike" measures participants' dislike of overweight adults. "Fear of fat" reflects the participants' own concern about becoming overweight. "Willpower" assesses participants' beliefs about the controllability of being overweight. Previous studies have found that the three subscales have adequate internal consistency (coefficient alphas = .67, .80, and .73) (Holub et al., 2011). Crandall's original study (1994), found the coefficient alphas to be .84, .66, and .79, demonstrating adequate to good internal consistency. The internal consistency for the scale in the present sample was good (coefficient alpha = .79). This study found the three subscales to have adequate internal consistency as well (coefficient alphas = .83, ..78, and .69).

Mothers and fathers also completed a measure to examine their anti-fat attitudes toward overweight teenagers. This measure was adapted from Holub et al.'s (2011) measure, which adapted Crandall's (1994) Anti-Fat Attitudes Questionnaire by changing the target to adolescents. Similar subscales will be used, but with the specification of adolescents: dislike of overweight adolescents, blaming adolescents, and blaming parents. "Dislike of overweight

adolescents" measures the extent to which participants dislike overweight adolescents (3 items; "I don't really like fat teens that much," "I don't like my teen to have friends that are fat," "I tend to think that teens who are overweight are a little untrustworthy"). "Blaming adolescents" will measure parents' beliefs about adolescents' responsibility for being overweight (4 items; "Fat teens tend to be fat pretty much through their own fault," "Teens who weigh too much could lose at least some part of their weight through a little exercise," "Some teens are fat because they have no willpower," "Some teens are overweight because they'd rather not go outside and be active.") "Blaming parents" will examine whether or not parents think that parents are responsible for their adolescent children's weight (3 items; "If teens are overweight, it is pretty much their parents' fault," "Some teens are overweight because their parents feed them too much," "Some teens are overweight because their parents don't encourage them to exercise.") Holub, Tan, and Patel (2011) found the internal consistency for these three subscales (children, rather than adolescents) to range from good to adequate (coefficient alphas = .88, .66, and .72). The internal consistency for this scale in the present sample was good (coefficient alpha = .84). This study found the three subscales to have adequate internal consistency as well (coefficient alphas = .83, .81, and .68).

High School and Undergraduate Students' Weight Bias. High school and undergraduate students' weight bias was assessed using the Attitudes Toward Obese Persons (ATOP) Scale, which was taken from Allison, Basile, and Yuker (1991). It presented 20 statements about obese persons in which participants indicate the extent to which they do or do not agree using a six-point Likert scale (-3 = *I strongly disagree*; +3 = *I strongly agree*). The 0, or neutral, will be omitted to force an agree/disagree answer. Items 2 through 6, 10 through 12, 14 through 16, 19, and 20 were reverse coded by multiplying the score by -1. Once the items

were summed up, 60 was added to the total. Therefore, scores were able to range from 0 to 120, in which higher scores suggest more positive attitudes toward obese persons. Allison et al. (1991) examined the psychometric properties of the ATOP and found the measure to have high internal consistency (alpha reliability range of .80 to .84) and sound construct and discriminant validity. In the present study, the internal consistency for high school students (coefficient alpha = .75) and undergraduate students (coefficient alpha = .77) were acceptable.

Fat Talk. The Negative Body Talk (NBT) scale, developed by Engeln-Maddox, Salk, and Miller (2012), examines the frequency of fat talk. This scale was adapted for adolescents/emerging adults to use in the context of speaking with their mothers and fathers. Instructions were as follows: "When talking with your mom (dad), how often do you **say** things like…" A list of thirteen fat talk statements were presented, for example, "I need to go on a diet." Participants rated how often they engage in this kind of talk with their mother and their father separately on a response scale that ranges from 1 (*never*) to 7 (*always*). In previous research (Engeln-Maddox et al., 2012), two subscales were identified: The body concerns subscale (assesses the tendency to express worries about the size or shape of one's body) and the body comparison subscale (assesses the tendency to voice unfavorable comparisons of one's body with others' bodies). In previous research, the NBT scale was found to have good internal consistency and adequate test-retest reliability ($\alpha = .94$) (Engeln-Maddox et al., 2012). The internal consistency for high school students ($\alpha_{mother} = .95$, $\alpha_{father} = .96$) and undergraduate students ($\alpha_{mother} = .93$, $\alpha_{father} = .92$) was high. A factor analysis using maximum likelihood estimation confirmed the two factor structure, body concerns and body comparisons, that has been identified in previous research (Engeln-Maddox et al., 2012). The factor analysis confirmed it was acceptable to use the body concerns and body comparisons subscales of the

NBT for both high school and first year undergraduate students for NBT-mothers. However, the CFA found that the statement, "You never have to worry about gaining weight," loaded onto the body comparison subscale, whereas it loaded onto the body concerns subscale in Engeln-Maddox et al. (2012). The distributions of the NBT for mothers and the NBT for fathers were positively skewed in the high school sample ($\alpha_{3mother} = 1.02$, $\alpha_{3father} = 1.96$) and the undergraduate sample ($\alpha_{3mother} = 1.02$, $\alpha_{3father} = 1.83$). This may be because adolescents are more likely to engage in fat talk with their peers than with their mothers and fathers. Because the degree of skew in fathers suggested a floor effect, the data for the NBT for fathers were dichotomized into little to no fat talk (NBT < 2.1) and some to much fat talk (NBT ≥ 2.1).

Analyses were run in SPSS to test for associations between parents' and children's attitudes toward overweight and obese individuals, as well as for associations between high school and undergraduate students' self-report measures of fat talk and their attitudes toward overweight and obese persons.

Procedure

Study 1. I used a convenience sampling method to recruit students from health classes at a high school. Three students out of 130 declined to participate. Once the students signed consent forms (Appendix A), I presented them with a survey that consisted of three questionnaires measuring attitudes toward overweight and obese people and one's level of engagement in fat talk with mothers and fathers (Appendix C). The only identifying questions were age, gender, ethnicity, participation in athletics, height, and weight. These surveys were completed in class. Upon completion, I presented a lesson on body image and weight bias to the students. All participation was voluntary and students received a 100% homework grade from their health teacher for participating. I also attempted to gather parent data in this study by

sending home parent consent forms and parent questionnaires with the students with the incentive of $5 compensation for each student who returned at least one parent questionnaire. However, only 6 students returned parent consent forms and questionnaires and I was not able to include high school parent data in the study. This study was approved by the Bates College Institutional Review Board.

Study 2. I used a convenience sampling method. I recruited first year undergraduate students through an email to all first year students at Bates College, as well as through an advertisement on the Bates Psychology Department webpage. The questionnaire for high school students was the same one used for the undergraduate students (Appendix C), however, undergraduate students followed a link in the recruitment email to the online survey rather than completing it in paper form. Undergraduate students received participation credit for their introductory psychology course or $5 for their participation. I recruited parents of the first year students through an automatically generated email, as the first year students were asked to provide the email address of their parent(s) at the end of their online questionnaire. This email contained a link to the survey to be completed by parents, which included two questionnaires, measuring anti-fat attitudes toward adults and anti-fat attitudes toward adolescents (Appendix B). Fifty-four students had at least one parent complete the AFA Questionnaire for adults and 50 students had at least one parent complete the AFA Questionnaire for teenagers. This study was approved by the Bates College Institutional Review Board.

Results

Study 1: High School Students

Preliminary Analyses. As a preliminary step, I examined variables for normality and skewness. Across variables, scores were normally distributed with the exception of NBT scores,

which were positively skewed for both mothers and fathers ($\alpha_{3mother} = 1.02$, $\alpha_{3father} = 1.96$). I made the determination that there was enough variability in mothers' NBT scores to justify parametric analyses. However, in the case of respondents' reports of fat talk with fathers, the skew was so large that I recoded the total NBT scores into a dichotomous variable (0-1: minimal reports of participation in fat talk with fathers, 2-7: some reports of participation in fat talk with fathers). Subscales for body concerns and body comparisons were also recoded into high and low variables. Because of the non-normality of participants' scores of fat talk with fathers, analyses with NBT scores for fathers involved either recoded scores or non-parametric analyses.

I first compared the ATOP scores of high school students to published undergraduate norms. The high school sample did not differ from the published norm ($M_{hs} = 64.35$, $SD = 14.60$ vs**.** $M_{norm} = 63.90$, $SD = 16.70$**;** t (123) = .34, $p = .73$), suggesting that high school students' attitudes are comparable to those of undergraduates. One sample t-tests also compared participants' reports of fat talk with mothers with previously published NBT scores (Engeln-Maddox et al., 2012) (Table 1). The current sample, in which participants responded to questions about conversations with mothers, had significantly lower scores than the previously published means for the NBT scale (t (127) = -2.92, $p < .01$, $M_{sample} = 2.61$, $SD = 1.54$; $M_{norm} = 3.01$, $SD = 0.97$). Engeln-Maddox et al.'s (2012) data represent adolescents' and young adults' reports of fat talk with their peers. Not surprisingly, the present study suggests that adolescents and young adults engage in fat talk more with their parents.

Table 1 Comparison of High School NBT Scores with Mothers to Previously Published Means

	Engeln-Maddox *M* (*SD*)	Mom *M* (*SD*)	*t* (*df* = 126)	Cohen's *d*
NBT total	3.01 (0.97)	2.61 (1.54)	-2.92**	0.31
Body concerns	3.06 (1.15)	2.58 (1.60)	-3.36**	0.34
Body comparison	2.95 (1.14)	2.64 (1.70)	-2.03*	0.21

*$p < .05$ **$p < .01$. ***$p < .001$.

Demographics Related to Weight Bias and Fat Talk. Two-tailed, independent t-tests examined possible differences in adolescent men and women in BMI and attitudes toward obese persons. Men and women did not differ in BMI or ATOP scores (t_{BMI} (118) = 1.36, p = .18; t_{ATOP} (122) = .40, p = .69).

The proportions of women and men who participated in athletics were also explored. Women and men did not differ in athletic participation (χ^2 (1) = .37, p = .54). Differences in athletes versus non-athletes were explored using two-tailed, independent t-tests. Athletic status was not associated with attitudes toward obese persons or engagement in fat talk. However, those who participated in a sport (M = 21.89, SD = 3.23) reported lower BMIs than those who did not (M = 24.26, SD = 5.81) (t (120) = 2.87, p < .01).

One-tailed bivariate correlations examined relationships between BMI, adolescents' ATOP scores, and NBT scores for both mothers and fathers, as I hypothesized that ATOP scores would be negatively correlated with NBT scores and positively associated with BMI. For the recoded NBT scores related to conversations with fathers, correlations were point-biserial. ATOP scores were also examined in relation to NBT scores through correlational analyses. (Table 2). BMI had a positive association with mother NBT scores (r (120) = .40, p < .001) and father NBT scores (r (117) = .16, p < .05), suggesting that the higher one's BMI, the more frequently one engaged in fat talk with parents. This held true for the body concerns and body comparisons subscales of the NBT scale for mothers and fathers, as well. There was a small negative association between ATOP scores and adolescents' NBT scores for both mothers (r (124) = -.18, p < .05) and fathers (r (124) = -.16, p < .05), meaning that the more negative one's attitudes toward obesity, the more one engaged in fat talk with one's parents. ATOP scores and the NBT body concerns were also inversely correlated for both mothers (r (124) = -.24, p < .01)

and fathers (r (124) = -.20, $p < .05$), suggesting that fat talk about body concerns is more strongly related to ATOP scores than conversations about body comparisons.

Table 2 High School Correlations between BMI, ATOP Scores, and NBT Scores with Mothers and Fathers

	1	2	3	4	5	6	7	8
1. BMI	1	-	-	-	-	-	-	-
2. ATOP	.00	1	-	-	-	-	-	-
3. NBTm	.40**	-.18*	1	-	-	-	-	-
4. NBTf	.16*	-.16*	.71**	1	-	-	-	-
5. NBTmcon	.41**	-.24**	.94**	.68**	1	-	-	-
6. NBTmcomp	.33**	-.08	.93**	.65**	.75**	1	-	-
7. NBTfcon	.23**	-.20*	.69**	.88**	.71**	.58**	1	-
8. NBTfcomp	.19*	-.05	.60**	.77**	.49**	.64**	.62**	1

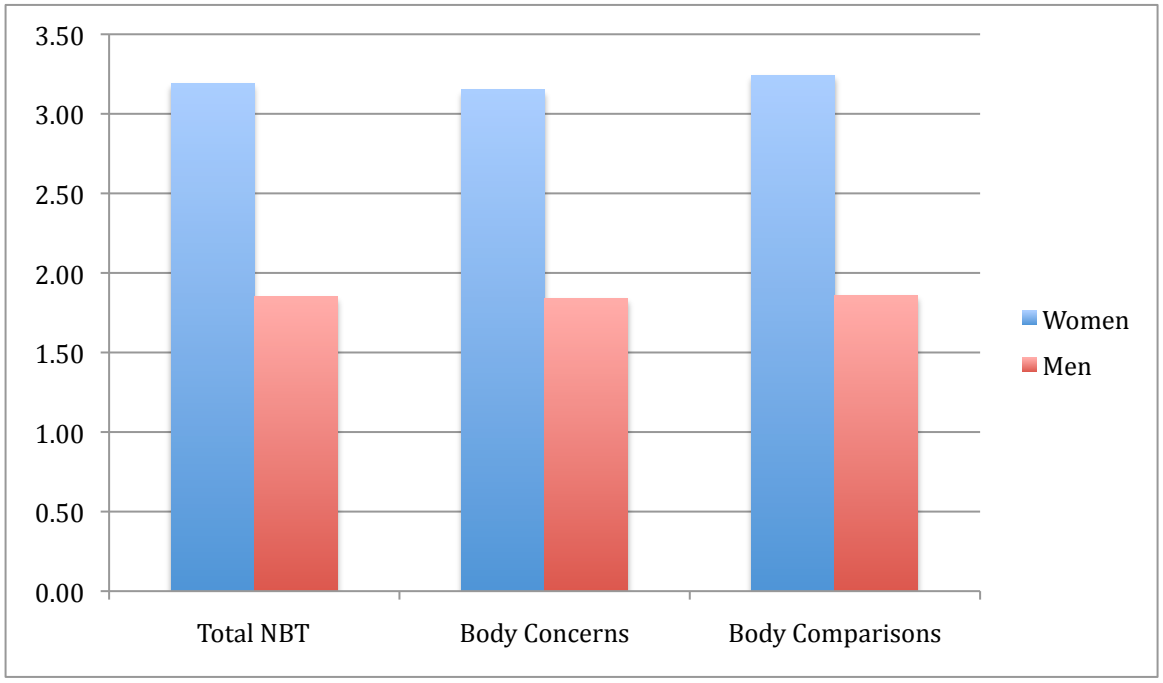
*$p < .05$ **$p < .01$., one-tailed
*** Using recoded fathers' NBT scores, point-biserial correlations.

Two-sample t-tests demonstrated that athletes and non-athletes did not differ in the amount with which they engaged in fat talk with their mothers (t (125) = -.42, $p = .68$). Differences in proportions of athletes and non-athletes who engage in fat talk with their fathers were tested using the recoded NBT scores. The results revealed comparable proportions of athletes and non-athletes who participated in fat talk with their fathers (χ^2 (1) = .03, $p = .87$).

Exploring Fat Talk. Potential differences between NBT scores for mothers and fathers were explored with a Wilcoxon Signed Rank Test, due to the non-normal distribution of fathers' scores. Across both genders, the distributions for mothers and fathers were significantly different ($p < .001$), in the direction of mothers having higher scores. This result held true for the body concerns and body comparisons subscales as well ($p_{concerns} < .001$; $p_{comparisons} < .001$). It may be that adolescents engage in fat talk more with their mothers than with their fathers because they spend more time with their mothers. It may also be that the issue of weight and body image is more salient to women, so that children are more likely to discuss body image and weight-related concerns with their mothers.

Gender and Racial Differences in Fat Talk. Two-sample t-tests revealed that female high school students ($M = 3.19$, $SD = 1.61$) participate in fat talk with their mothers significantly more than males ($M = 1.85$, $SD = 1.05$) ($t\ (125) = 5.38$, $p < .001$). Similar results were found for the body concerns and body comparisons subscales, indicating that women students ($M_{concerns} = 3.15$, $SD = 1.68$; $M_{comparisons} = 3.24$, $SD = 1.77$) engage in such fat talk significantly more than men ($M_{concerns} = 1.84$, $SD = 1.15$; $M_{comparisons} = 1.86$, $SD = 1.23$) (Figure 1).

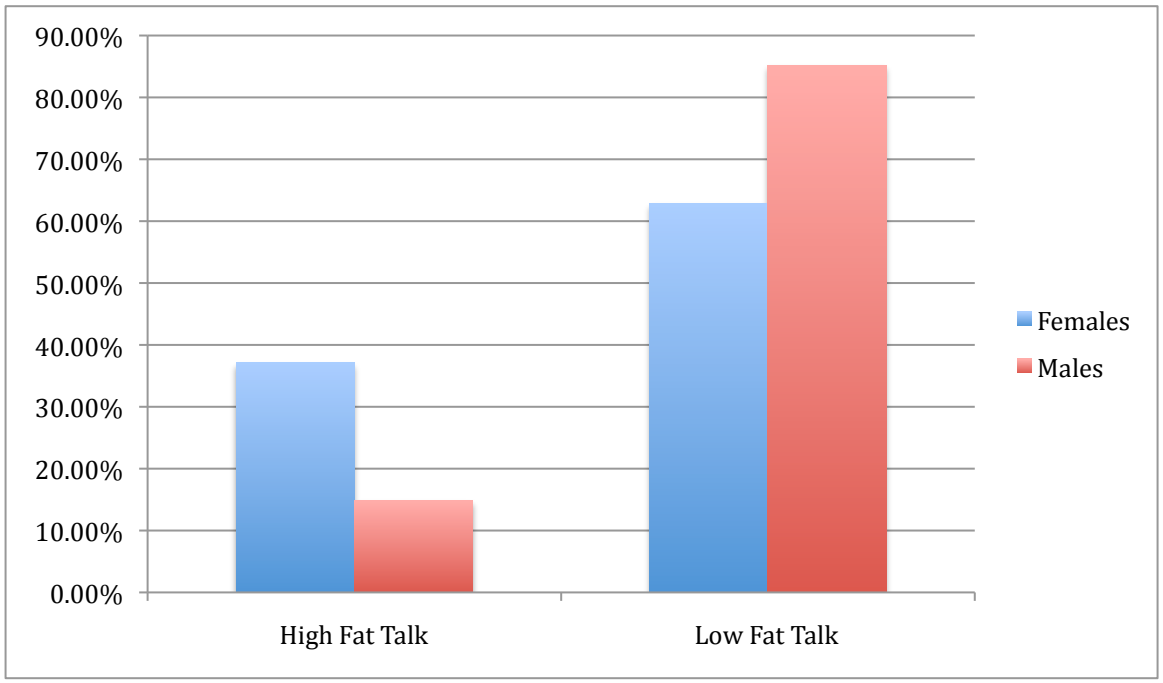
Figure 1 High School Women's vs. Men's Participation in Fat Talk with Mothers



Differences between the proportions of male and female high school students who engage in fat talk (NBT total, body concerns, and body comparisons) with their fathers were tested using the recoded NBT scores. The results indicated that a significantly larger proportion of women (37.1%) than men (14.8%) reported engaging in fat talk with their fathers ($\chi^2\ (1) = 7.64$, $p < .01$). This held true for both subscales of the NBT. A significantly larger proportion of women (38.9%) than men (14.8%) reported engaging in body concerns fat talk with their fathers ($\chi^2\ (1) = 8.76$, $p < .01$). Similarly, a significantly larger proportion of women (31.9%) than men

(14.8%) reported engaging in body comparisons fat talk with their fathers ($\chi^2_{father}(1) = 4.88$, $p < .05$) (Figure 2).

Figure 2 Percentages of Women and Men's Participation in Fat Talk with Fathers



Two-sample t-tests explored racial differences (White vs. Native American, Black, Asian, and Hispanic) in NBT scores regarding conversations with mothers. Results demonstrated no differences between Whites and non-Whites in fat talk scores with mothers ($t(123) = .73$, $p = .47$).

Differences between the proportions of White and non-White individuals who engaged in fat talk (NBT total, body concerns, and body comparisons) with their fathers were tested, again using the recoded NBT scores. The results revealed no difference in the proportions of White and non-White individuals who participated in fat talk with their fathers ($\chi^2(1) = .38$, $p = .54$).

Predicting Attitudes Toward Obesity from Fat Talk. Multiple linear regressions using the enter methods were used to test models predicting attitudes toward obese persons in adolescents (Table 3). NBT scales are highly correlated, so only the NBT body concerns

subscale for mothers was selected for entry into the model. Gender, BMI, athletic participation, and NBT body concerns were entered into a regression model. Gender (t = -2.34, p < .05) and NBT body concerns with mothers (t = -3.80, p < .001) were significant predictors. The full model accounted for 13% of the variance (F (4, 116) = 4.07, p < .01). BMI and athletics were not significant predictors. Participation in fat talk with fathers did not predict attitudes toward obesity in regression models.

Predicting Attitudes Toward Obesity in Women from Fat Talk. I then ran linear regressions using the enter method on only women respondents because there was not much variability in NBT scores for men, and because previous literature has reported stronger associations between maternal attitudes and children's anti-fat bias (Table 3). BMI, athletic participation, and body concerns fat talk with mothers were entered into a regression model to predict attitudes toward obesity in high school women. NBT body concerns scores for mothers was a significant predictor (t = -3.28, p < .01). The full model accounted for 16% of the variance (F (3, 64) = 3.88, p < .05). Athletics and BMI were not significant predictors. In a second model, body concerns fat talk with fathers was entered into a regression model. NBT body concerns with fathers was a significant predictor (t = -2.20, p < .05). The full model accounted for only 7% of the variance (F (1, 69) = 4.83, p < .05) in attitudes toward obesity in women. The body comparisons subscale of fat talk did not predict ATOP scores across models.

Table 3 Regression Models Predicting High School Students' ATOP Scores from NBT Scores with Parents

Variable	**Beta**	***t***	***p***
Gender	-.228	-2.336	.021
BMI	.110	1.096	.275
Athletics	.115	1.248	.215
NBT Concerns, mother	-.400	-3.797	.000
Full Model, F = 4.068	R^2 = .13, p = .004		
Female Model			

BMI	.096	.702	.485
Athletics	.143	1.151	.254
NBT Concerns, mothers	-.438	-3.277	.002
Full Model, $F = 3.883$	$R^2 = .16$, $p = .013$		

Predicting Attitudes toward Obesity in Men from Fat Talk. A variety of models were tested using a gender, race, athletic participation, BMI, and participation in fat talk with mothers and fathers to predict ATOP scores in high school men. Selected interactions were also tested. None of the models reached significance.

Study 2: First Year Undergraduate Students

Preliminary Analyses. As a preliminary step, I examined variables for normality and skewness. Across variables, scores were normally distributed with the exception of NBT scores, which were positively skewed for both mothers and fathers ($\alpha_{3mother} = 1.02$, $\alpha_{3father} = 1.83$). I made the determination that there was enough variability in mothers' NBT scores to justify the use of parametric analyses. However, in the case of respondents' reports of fat talk with fathers, the skew was so large that I recoded the total NBT scores into a dichotomous variable (0-1: minimal reports of participation in fat talk, 2-7: some reports of participation in fat talk). Subscales for body concerns and body comparisons were also recoded into high and low variables. Because of the non-normality of scores for fat talk with fathers, analyses with NBT scores for fathers involved non-parametric analyses.

I then compared the ATOP scores assessing attitudes toward obesity of first year undergraduate students to published undergraduate norms to published norms. The undergraduate sample did not differ from the published norm ($M_{college} = 61.89$, $SD = 14.23$, $M_{norm} = 63.90$, $SD = 16.70$; t (93) = -1.37, $p = .18$), suggesting that first year undergraduate students' attitudes are comparable to those of undergraduates. One sample t-tests also compared

participants' reports of fat talk with mothers with previously published NBT scores (Engeln-Maddox et al., 2012). (Table 4). The current sample, in which participants responded to questions about conversations with mothers, had significantly lower scores than the previously published means for the NBT scale (t (93) = -3.59, $p < .01$, $M_{sample} = 2.52$, $SD = 1.31$; $M_{norm} = 3.01$, $SD = 0.97$). It is important to note, however, that the means reported by Engeln-Maddox et al. (2012) represent adolescents' and young adults' ratings of fat talk with their peers. Not surprisingly, the data indicate that adolescents engage in fat talk more with their peers than with their parents.

Table 4 Comparison of Undergraduate NBT Scores with Mothers to Previously Published Means

	Engeln-Maddox *M* (*SD*)	Mom *M* (*SD*)	*t* (*df* = 93)	Cohen's *d*
NBT total	3.01 (0.97)	2.52 (1.31)	-2.92**	0.74
Body concerns	3.06 (1.15)	2.67 (1.50)	-2.51**	0.52
Body comparison	2.95 (1.14)	2.35 (1.39)	-4.16***	0.86

*$p < .05$ **$p < .01$. ***$p < .001$.

Demographics Related to Obesity Attitudes and Fat Talk. One-tailed bivariate correlations examined relationships between BMI, first year undergraduate students' ATOP scores, and NBT scores for mothers (Table 5). For the recoded NBT scores related to conversations with fathers, correlations are point-biserial, and for analyses involving two dichotomized variables, phi correlations are reported. BMI had a negative association with ATOP scores (r (92) = -.25, $p < .01$), suggesting that undergraduate students with higher BMIs reported more negative attitudes toward obese persons. BMI was positively associated with NBT body concerns scores with mothers (r (92) = .18, $p < .05$), indicating that the higher the BMI, the more frequently undergraduates engaged in body concerns fat talk with mothers. The same relationship was not found with the body comparisons subscale with mothers. No associations were found between the first year undergraduate students' attitudes toward obese

persons and their engagement in fat talk with their mothers (r_{total} (92) = .02, p = .44; $r_{concerns}$ (92) = .00, p = .50, $r_{comparisons}$ (92) = .03, p = .38).

Table 5 Undergraduate Correlations between BMI, ATOP Scores, and NBT Scores with Mothers and Fathers

	1	2	3	4	5	6	7	8
1. BMI	1	-	-	-	-	-	-	-
2. ATOP	.25**	1	-	-	-	-	-	-
3. NBTm	.16	.02	1	-	-	-	-	-
4. NBTmcon	.18*	.00	.93**	1	-	-	-	-
5. NBTmcomp	.10	.03	.88**	.63**	1	-	-	-
6. NBTf	.11	-.07	.62**	.58**	.53**	1	-	-
7. NBTfcon	.14	.04	.50**	.53**	.35**	.79**	1	-
8. NBTfcomp	.09	.06	.50**	.38**	.55**	.73**	.51**	1

*p < .05 **p < .01.
***Using recoded fathers' NBT scores, point-biserial correlations

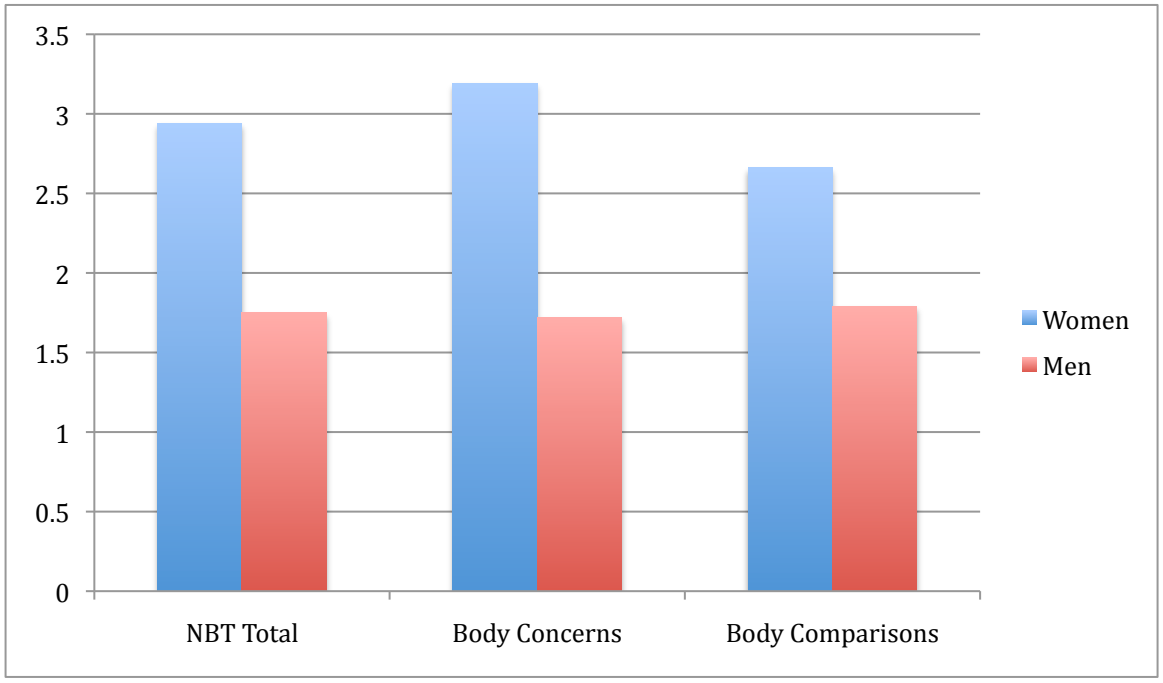
Two-tailed independent t-tests explored possible differences in undergraduate men and women in BMI and ATOP scores. Men and women did not differ in BMI or ATOP scores (t_{BMI} (92) = -1.01, p = .32; t_{ATOP} (92) = -.36, p = .72).

Exploring Fat Talk. Potential differences between NBT scores for mothers and fathers were explored using a Wilcoxon Signed Rank Test. Across both genders, the distributions for mothers and fathers were significantly different (p < .001) in the direction of mothers having higher scores than fathers. This result held true for the body concerns and body comparisons subscales as well ($p_{concerns}$ < .001; $p_{comparisons}$ < .001). Similar to high school participants, it may be that undergraduate students engage in fat talk more frequently with their mothers than with their fathers because the issue of weight and body image is more salient to women, leading both sons and daughters to participate in this kind of talk with their mothers more often than with their fathers.

Gender and Racial Differences in Fat Talk. Women undergraduates (M = 2.94, SD = 1.21) participated in fat talk with their mothers significantly more than men (M = 1.75, SD =

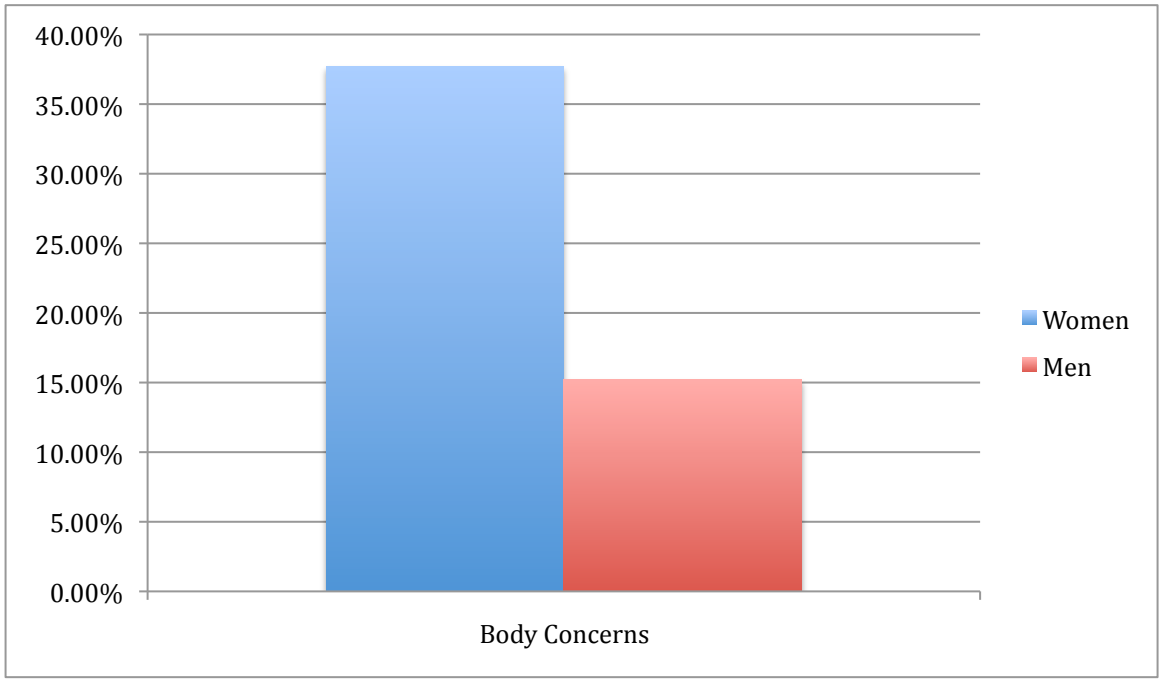
1.14) (t (92) = 4.64, $p < .001$). Similar results were found for the body concerns (M_{women}= 3.19, SD = 1.44; M_{women}= 3.19, SD = 1.44) and body comparisons subscales (M_{women}= 2.66, SD = 1.37 M_{men}= 1.79, SD = 1.26) (Figure 3).

Figure 3 Undergraduate Women's vs. Men's Participation in Fat Talk with Mothers



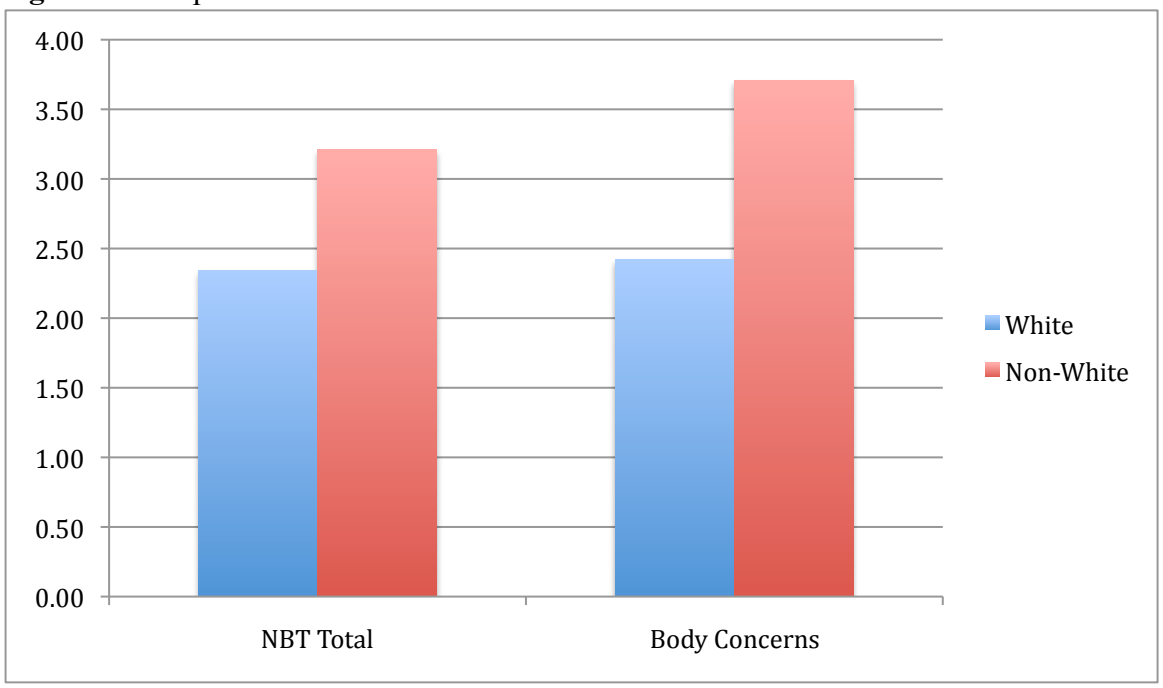
The proportion of women and men who engaged in fat talk with their fathers was tested using the recoded NBT scores. The results indicated that the proportion of women and men engaging in total fat talk and body comparisons fat talk with their fathers was not significantly different. This may be accounted for by the fact that undergraduate students infrequently engaged in fat talk with their fathers, creating a floor effect. Nonetheless, there were a larger proportion of females (37.7%) than males (15.2%) reporting participation in body concerns fat talk with their fathers (χ^2 (1) = 5.21, $p < .05$) (Figure 4).

Figure 4 Percentage of Undergraduate Women and Men's Participation in Body Concerns Fat Talk with Fathers



Two-sample t-tests explored racial differences in NBT scores for conversations with mothers (total, body concerns, and body comparisons) (Figure 5). Results demonstrated that, across gender, non-White participants (M_{total} = 3.21, SD = 1.40; $M_{concerns}$ = 3.71, SD = 1.52) engaged in more total fat talk and body concerns fat talk with their mothers than White participants (M_{total} = 2.34, SD = 1.21; $M_{concerns}$ = 2.42, SD = 1.37). Results should be interpreted cautiously due to the fact that there were only 14 non-White participants, compared to 76 White participants in the sample.

Figure 5 Comparison of Whites' and Non-Whites' NBT Scores with Mothers



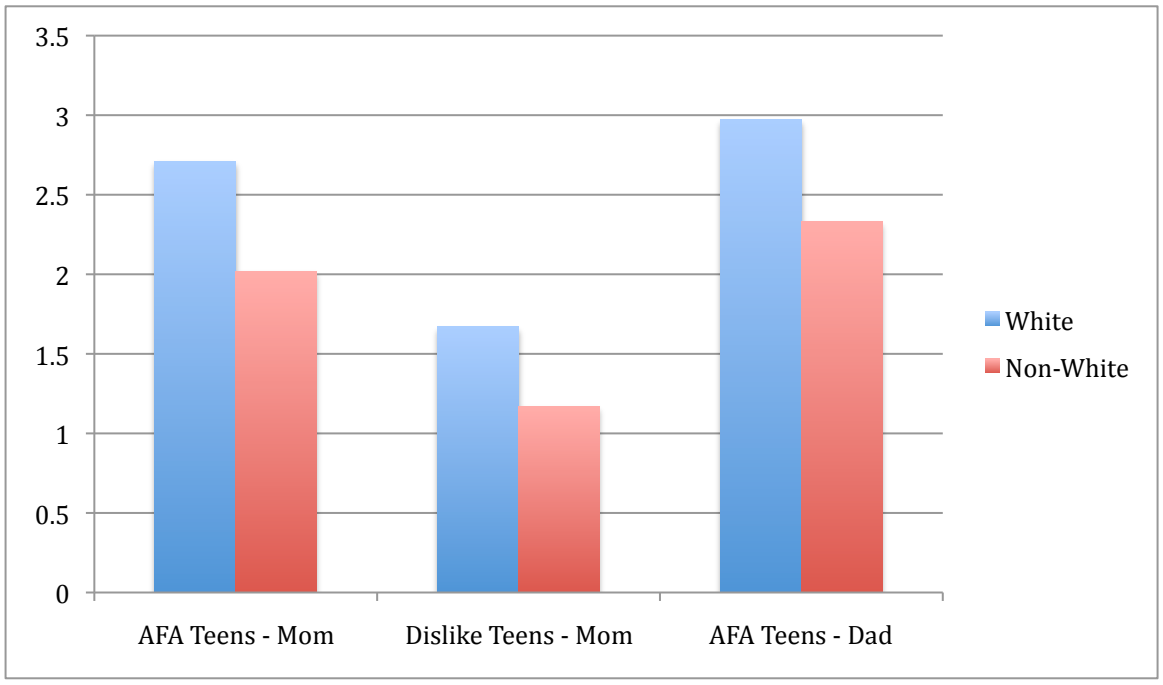
The proportion of White and non-White participants who engaged in fat talk (NBT total, body concerns, and body comparisons) with their fathers were tested, again using the recoded NBT scores. The results revealed no difference in the proportions of White and non-White individuals who participate in fat talk with their fathers (χ^2 (1) = .08, p = .78).

Demographic Variables and Parents' Anti-Fat Attitudes. One-tailed bivariate correlations examined potential relationships between mothers' and fathers' anti-fat attitudes and their children's age, BMI, and mothers' and fathers' BMIs. The Anti-Fat Attitudes scale for adults and teenagers had "dislike" subscales, indicating how much the respondent "disliked" overweight adults and teenagers, respectively. These sub-scales were examined because in previous research, the "dislike" subscale of the AFA in parents has been correlated with BMI and predicted attitudes toward obesity in children (Holub et al., 2011). Mothers and fathers with higher BMIs reported less dislike of overweight adults, but no such association was found with

dislike of overweight teenagers (r_{mother} (40) = -.27, $p < .05$; r_{father} (32) = -.29, $p < .05$). First year students' age and BMI were not related to their parents' AFA scores toward adults or teenagers.

Two-sample independent t-tests then explored racial differences in parents' anti-fat attitudes toward adults and teenagers (Figure 6). Results revealed that mothers of White children ($M = 2.71$, $SD = .60$) reported significantly greater anti-fat attitudes toward teenagers than mothers with non-White children ($M = 2.02$, $SD = .80$) (t (41) = 2.49, $p < .05$). Mothers of White children ($M = 1.67$, $SD = .95$) also reported greater dislike of overweight teenagers than mothers of non-White children ($M = 1.17$, $SD = .41$) (t (41) = 2.19, $p < .05$). Fathers of White children ($M = 2.97$, $SD = .50$) reported greater anti-fat attitudes toward teenagers than fathers of non-White children ($M = 2.33$, $SD = 1.03$) (t (32) = 2.37, $p < .05$). These results should be interpreted with caution, as only 6 mothers and 7 fathers of non-White students were included in the sample.

Figure 6 Parents' Anti-Fat Attitudes by Undergraduate Students' Race



Parents' Anti-Fat Attitudes Toward Adults and Teens. One-tailed bivariate correlations explored relationships between mothers' and fathers' anti-fat attitudes toward adults and teenagers (Table 6). Mothers' AFA scores toward adults were positively correlated with their AFA scores toward teenagers (r (39) = .75, $p < .001$). Fathers' AFA scores toward adults were also positively related with their AFA scores toward teenagers (r (19) = .87, $p < .001$). As expected, mothers' and fathers' AFA scores toward adults were positively associated (r (19) = .42, $p < .05$). Similar results were found for mothers and fathers' AFA scores toward teenagers (r (19) = .60, $p < .01$). These results suggested that mothers and fathers share similar views toward overweight children and adults, and that parents who hold anti-fat attitudes toward adults also hold anti-fat attitudes toward teenagers. Furthermore, this suggests a family culture in which anti-fat attitudes are present in both parents, which can then be communicated to their children.

Table 6 Undergraduate Correlations between Mothers' and Fathers' Anti-Fat Attitudes toward Adults and Teenagers

	1	2	3	4
1. Mom AFA	1	-	-	-
2. Dad AFA	.42*	1	-	-
3. Mom AFA, Teen	.75**	.64**	1	-
4. Dad AFA, Teen	.26	.87**	.60**	1

*$p < .05$, **$p < .01$

Two-tailed independent samples t-tests examined differences between mothers and fathers in anti-fat attitudes and dislike toward overweight adults and teenagers. The results did not indicate that mothers and fathers significantly differed in their attitudes.

Paired t-tests explored whether parents' anti-fat attitudes differed based on the target of those attitudes. Within the AFA toward teenagers scale, there are scales assessing blame of teenagers and blame of parents for overweight. Inconsistent with previous literature (Holub et al. 2011), mothers reported less anti-fat attitudes toward adults (M_{mother} = 2.46, SD = .61) than they

did toward teens (M_{mother} = 2.46, SD = .61) (t_{mother} (39) = -2.03, $p < .05$). Similarly, fathers reported less anti-fat attitudes toward adults (M_{father} = 2.65, SD = .61) than they did toward teens (M_{father} = 2.82, SD = .68) (t_{father} (32) = -2.91, $p < .01$). Consistent with previous literature, mothers and fathers had higher "dislike" scores for overweight adults (M_{mother} = 1.88, SD = .73; M_{father} = 2.24, SD = .71) compared to overweight teens (M_{mother} = 1.60, SD = .92; M_{father} = 1.85, SD = .78) (t_{mother} (41) = 2.82, $p < .01$, t_{father} (32) = 5.41, $p < .001$). Furthermore, fathers blamed teenagers (M = 3.39, SD = .84) when teenagers were overweight more than they blamed the parents (M = 3.08, SD = .82) (t (34) = 2.72, p = .01).

A one-way ANOVA examined racial and ethnic differences in parents' anti-fat attitudes. No differences were found in anti-fat attitudes toward adults based on race or ethnicity. However, White parents (M = 2.82, SD = .57) reported significantly greater AFA scores toward teenagers than non-White parents (M = 2.30, SD = .93) (F (1, 78) = 7.32, $p < .01$).

Relationship between Parents' Anti-Fat Attitudes, Student Engagement in Fat Talk, and Students' Attitudes toward Obese Persons. One-tailed, bivariate correlations explored potential relationships between parent's weight bias (AFA), adolescents' engagement in fat talk (NBT) and students' attitudes toward obese persons (ATOP). I sought to replicate previous findings that mothers' anti-fat attitudes directed toward children were associated with children's stereotypes about overweight people (Holub et al., 2011), as well as to explore the potential influence of fathers' anti-fat attitudes. I also included the AFA "dislike" subscale, as maternal dislike of overweight children was a predictor of children's weight bias in previous research (Holub et al., 2011). For the recoded NBT scores related to conversations with fathers, correlations were point-biserial.

NBT scores for conversations with mothers and fathers were not associated with adolescents' ATOP scores. Mothers' AFA scores about overweight adults were also not associated with their children's ATOP scores. However, mothers' AFA scores for overweight teenagers were negatively associated with their children's ATOP scores (r (41) = -.27, $p < .05$), indicating that the more negative the mothers' attitudes toward overweight teens, the more negative their children's attitudes toward obese persons. Mothers' dislike of overweight teens was also negatively correlated with their children's ATOP scores (r (41) = -.26, $p < .05$). This suggested that more maternal-dislike for overweight teens was associated with students' more negative attitudes toward obese persons. Similar to the results found with mothers, the fathers' dislike for overweight teens was negatively associated with students' ATOP scores (r (32) = -.30, $p < .05$).

Mothers' AFA scores toward overweight adults and teenagers were not correlated with their children's engagement in fat talk with them. However, fathers' AFA scores toward teens (r (32) = -.34, $p < .05$) were inversely associated with students' reports of talk about body concerns with them, indicating that students participated in less fat talk with fathers who reported more negative attitudes toward overweight teens. The negative relationship between fathers' AFA scores toward teens and students' participation in fat talk (NBT total) with their fathers approached significance (r (32) = -.25, $p = .08$).

Predicting Attitudes toward Obesity from Fat Talk. Linear regressions using the enter method were used to test models predicting first year students' attitudes toward obese persons (Table 7). Measures of fat talk and of parents' anti-fat attitudes could not be entered into models simultaneously because of collinearity. Because of the small sample size of minority respondents, race was not included in analyses. For the first model, NBT with mothers and

undergraduates' BMI were entered into a regression model. BMI was a significant predictor (t = -2.54, $p < .05$). NBT with mothers was not a significant predictor. The full model significantly accounted for only 7% of the variance in ATOP scores (F (2, 93) = 3.23, $p < .05$). In a second regression, NBT with fathers (recoded) and undergraduates' BMI were entered into the model. BMI was a significant predictor (t =2.44, $p < .05$). NBT with fathers was not a significant predictor. The full model accounted for only 7% of the variance in ATOP scores (F (2, 92) = 3.19, $p < .05$). I then ran linear regressions with men and women separately, using NBT scores with mothers as an independent variable. No significant models were found. Results suggest that participation in fat talk with parents does not play a major role in the transmission of weight bias from parents to their undergraduate-aged children.

Table 7 Regression Models Predicting Undergraduates' ATOP Scores from NBT Scores with Parents

Variable	Beta	*t*	*p*
BMI	-.260	-2.537	.013
NBT Total, mother	.059	.572	.569
Full Model, F = 3.232	R^2 = .07, p = .044		
BMI	-.250	-2.436	.017
NBT Total, father	-.042	-.408	.684
Full Model, F = 3.190	R^2 = .07, p = .046		

Predicting Attitudes toward Obesity from Parents' Anti-Fat Attitudes. Linear regressions were used to test models predicting attitudes toward obesity in first year undergraduate students from their mothers' and fathers' anti-fat attitudes (Table 8). I ran models predicting ATOP scores from fathers' AFA scores toward adults and teenagers while controlling for BMI. No models were significant. Dislike of overweight children has been demonstrated to be significant in predicting children's weight bias in previous studies (Holub et al., 2011). As a result, I entered gender, BMI, and fathers' dislike of overweight teenagers into a regression

model. Fathers' dislike of overweight teenagers was a significant predictor (t = -2.22, p < .05) and BMI approached significance (t = -1.82, p = .08). Gender was not a significant predictor. The full model accounted for 22% of the variance in ATOP scores (F (3, 33) = 2.76, p = .06). Gender, BMI, and mothers' AFA scores toward teens were entered into a regression model. BMI (t = -2.00, p = .05) and mothers' AFA scores toward teens (t = -2.02, p = .05) were significant predictors. Gender was not a significant predictor. The full model accounted for 20% of the variance in ATOP scores (F (3, 42) = 3.17, p < .05).

Because previous research indicates there may be gender differences in attitudes toward obesity and weight bias, I decided to explore models with just men and just women. Including only first year men in analyses, mothers' anti-fat attitudes toward teenagers and men's BMI were entered into regression model. Mothers' AFA scores for teenagers (t = -3.02, p < .05) and BMI (t = -2.77, p < .05) were significant predictors. The full model accounted for 54% of the variance in ATOP scores (F (2,12) = 5.92, p < .05). No significant models were found using mothers' or fathers' anti-fat attitudes to predict children's attitudes toward obese persons when selecting only first year women.

Because relatively few fathers responded to the study, and because some students had only fathers or mothers who responded, parent data were recoded into a single variable indicating the presence of high anti-fat attitudes in at least one of the student's parents. This approach provided a larger sample and more power for subsequent regression analyses. Gender, BMI, and combined parents' AFA scores toward adults were entered into a regression model. First year students' BMI (t = -2.23, p < .05) was a significant predictor, and parents' AFA scores toward adults (t = -1.94, p = .06) reached significance in the model. Gender was not a significant predictor. The full model accounted for 15% of the variance in first years' ATOP scores (F (3,

53) = 3.01, $p < .05$). The results demonstrated that having at least one parent above the median split in anti-fat attitudes toward adults predicted their undergraduate children's attitudes toward obese persons after controlling for BMI.

Table 8 Regression Models Predicting Undergraduates' ATOP Scores from Parents' AFA Scores

Variable	Beta	*t*	*p*
Gender	.262	1.510	.142
BMI	-.298	-1.824	.078
AFA Dislike Teen, father	-.382	-2.223	.034
Full Model, $F = 3.190$	$R^2 = .22$, $p = .059$		
Gender	.227	1.578	.123
BMI	-.282	-1.962	.057
AFA Teen, mother	-.292	-2.024	.050
Full Model, $F = 3.169$	$R^2 = .20$, $p = .035$		
Male Model			
BMI	-.655	-2.772	.020
AFA Teen, mother	-.714	-3.022	.013
Full Model, $F = 5.923$	$R^2 = .54$, $p = .020$		
Gender	.144	1.095	.279
BMI	-.294	-2.226	.031
AFA Adult, total	-.258	-1.940	.058
Full Model = $F = 3.014$	$R^2 = .15$, $p = .039$		

High School Students vs. First Year Undergraduate Students

Differences between High School and College Responses. A two-tailed independent samples t-test examined differences between first year undergraduate students and high school students in their ATOP scores. High school ($M = 61.89$, $SD = 14.23$) and undergraduate students ($M = 64.35$, $SD = 14.60$) did not significantly differ in their attitudes toward obese persons (t (216) = 1.24, $p = .22$).

Differences between high school and first year college participants' participation in fat talk (total, body concerns, and body comparisons) with their mothers were examined using two-

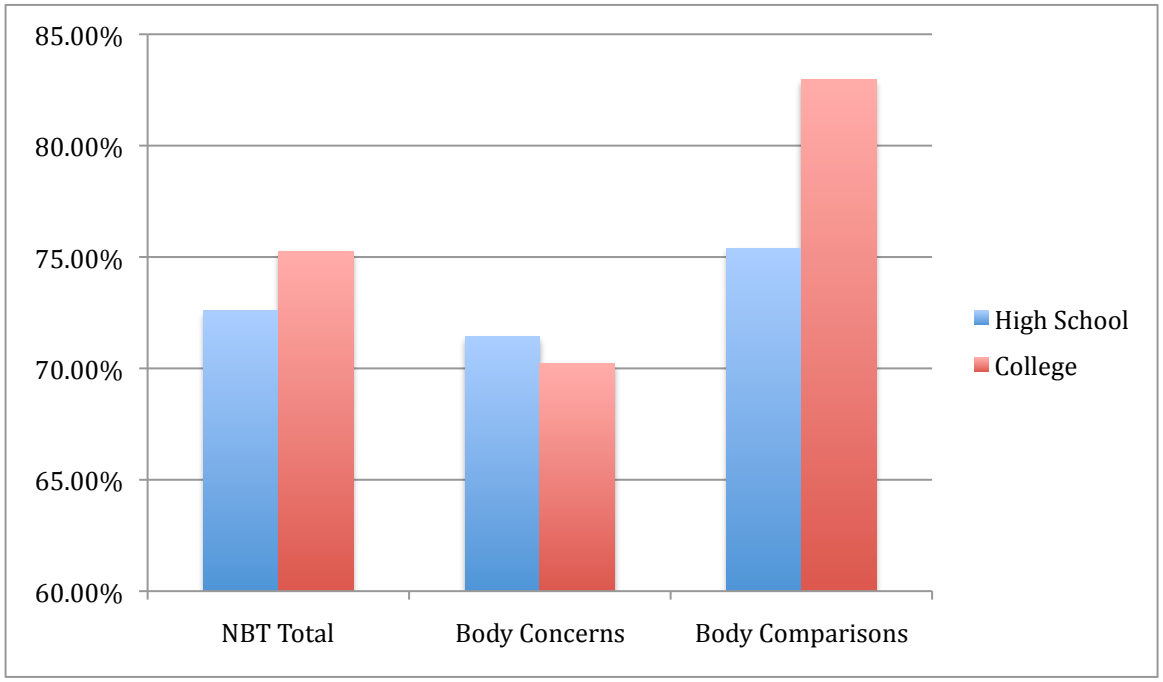
sample independent t-tests (Table 9). The results indicated that high school and undergraduate students do not differ in their amount of fat talk participation with mothers (t_{total} (219) = .44, p = .66; $t_{concerns}$ (219) = -.42, p = .68; $t_{compare}$ (219) = 1.36, p = .18).

Table 9 Comparison of NBT Scores with Mothers in High School and College

	High School *M* (*SD*)	College *M* (*SD*)
NBT Total	2.61 (1.54)	2.52 (1.31)
Body Concerns	2.58 (1.60)	2.67 (1.50)
Body Comparisons	2.64 (1.70)	2.35 (1.39)

Differences between the proportion of first year undergraduate and high school students who engaged in fat talk with their fathers were tested using the recoded NBT scores (Figure 7). The results indicated that proportions of high school and first year undergraduate students' participation in fat talk (total, body concerns, and body comparisons) were not statistically different (χ_{total}^2 (1) = .20, p = .66; $\chi_{concerns}^2$ (1) = .04, p = .84; $\chi_{compare}^2$ (1) = 1.84, p = .18).

Figure 7 Percentages of High School and Undergraduate Students' Participation in Fat Talk with Fathers



Discussion

This study examined the development or perpetuation of weight bias in high school and undergraduate students. Such bias may result in discrimination against overweight individuals, a growing segment of the U.S. population. The stigma associated with overweight has profound detrimental emotional, social, and health consequences on the overweight that may be long lasting (Puhl & Heuer, 2010; Puhl & Latner, 2007). A growing literature has demonstrated that children and adolescents, too, are targets of such stigmatization, particularly from peers, educators, and parents (Puhl & Latner, 2007). Children and adolescents are particularly susceptible to the consequences of weight bias and discrimination, as they are forming important social relationships as well as their own identities during these developmental periods. Adverse effects of weight bias during these times may hinder their psychological, social, and academic development (Bromfield, 2009).

It is important to examine the ways in which weight bias is transmitted to and perpetuated in children. It has been demonstrated that children as young as age three have expressed negative attitudes toward overweight peers, and that by four they make negative attributions about peers' excess body weight (Cramer & Steinwert, 1998). Furthermore, research suggests that such bias increases throughout childhood, and that it does not begin to level off until late adolescence and early adulthood (Latner, Stunkard, & Wilson, 2005). The ways in which children and adolescents internalize weight bias is less well understood than the nature of the bias itself. Parents play an important role in the development of their children's attitudes, values, and beliefs, through both their actions and words (Steinberg, 2001). Research demonstrates that parents hold and exhibit anti-fat attitudes toward both adults and children (Crandall, 1994; Adams et al., 1998). For example, Davison and Birch (2004) found that 9-year-old girls were

more likely to report negative attitudes toward overweight individuals if their parents valued thinness and weight loss. Parents may be inadvertently communicating their negative attitudes toward overweight to their children in both their behaviors and comments (Haines et al., 2008). The exact mechanisms through which this occurs, though, have not received much attention in the research.

Fat talk is a normative phenomenon, particularly among women, that is common throughout both adolescence and adulthood, and it is associated with greater body dissatisfaction (Salk & Engeln-Maddox, 2012). Furthermore, it has been demonstrated that both hearing and participation in fat talk *leads* to an increased state of body dissatisfaction (Salk & Engeln-Maddox, 2012). Research suggests that fat talk reinforces the thin ideal and constructs our notions of the meaning of weight (Arroyo & Harwood, 2012; Salk & Englen-Maddox, 2011). Therefore, it is plausible that participation in and exposure to fat talk may increase negative attitudes toward overweight and obesity.

The current study sought to extend the research on the influence of mothers' anti-fat attitudes on their children's attitudes by studying fat talk and stigma in adolescent and undergraduate men and women. It also explored fathers' influence on weight bias in children, as less is known about the role of fathers' attitudes in development of such biases. Last, this study aimed to determine whether fat talk with parents is a mechanism through which parents' anti-fat attitudes are transmitted to their adolescent and undergraduate children.

Fat Talk with Parents in High School and College

High school students' and undergraduates' reports of fat talk with both mothers and in particular, fathers, showed floor effects, and the means in the current study were significantly lower than the means in previously published research in which fat talk took place between

undergraduate peers (Engeln-Maddox et al., 2012). Such results make sense—it is likely that fat talk is more common between peers than between parent and child. The majority of fat talk research has examined fat talk in adolescent and undergraduate women, and it appears to be most normative among this population (Salk & Engeln-Maddox, 2011). Furthermore, many women engage in such talk due to social pressures and norms, as it is an expected social activity within their peer groups (Tompkins et al., 2009). There are a number of possible reasons why young women and men engaged in fat talk with their peers more than with their parents. It may simply be that during adolescence and early adulthood, a time when children gain independence from their parents, they speak with their peers more often than with their parents. It also may be that high school students and undergraduates feel less social pressure to make disparaging and negative comments about their weight and body shape in the presence of their parents.

As predicted, high school students and undergraduates participated in fat talk significantly more with mothers than fathers. It may be that weight and body image issues are more salient to women than men, leading both sons and daughters to discuss such concerns with their mothers rather than their fathers. Research has demonstrated that, "the culture at large allows for much less deviation from aesthetic ideals for women than it does for men" (Fikkan &Rothblum, 2011). Due to such cultural expectations, more women than men feel badly about their bodies and partake in actions to alleviate such feelings, including dieting, exercising, and surgery (Fikkan & Rothblum, 2011). Furthermore, Fikkan and Rothblum assert that men are most often the ones perpetuating this thin ideal in women (2011). Therefore, it would make sense that children would turn to their mothers to discuss weight- and body image-related concerns. However, it may also be that high school and undergraduate students talk with their mothers more than their fathers in general. That is, in the stereotypical family, the father works

and the mother spends more time in the home in the caretaker role. Children may therefore engage in fat talk with their mothers more than fathers simply because they have more time with their mothers.

Gender and Racial Differences in Fat Talk and Attitudes toward Obesity

Similarly, women participated in fat talk with their parents significantly more than men in both the high school and undergraduate samples (although in the undergraduate sample, women participated in fat talk with fathers more than men only when discussing body concerns). It may be that women share negative and disparaging remarks and concerns about their weight and body shapes more than men. Although it is not universally true, it appears that women experience the most weight stigma and discrimination (Fikkan & Rothblum, 2011). In order to cope with the bias, women may turn to fat talk with others as a source of support, as some women report that it makes them feel better (Salk & Engeln-Maddox, 2011). Research by Martz, Petroff, Curtin, and Bazzini (2009) indicated that fat talk is a female phenomenon, even beyond the college-age years. They posited that in addition to expressing body dissatisfaction, women also use fat talk to, "disclose personal information, affirm one another, and communicate modesty and humbleness" (39, 2011).

However, some research also indicates that the discrepancy between men and women in fat talk may not be as large as previously thought. That is, a study found that men felt more pressure to engage in positive body talk than fat talk (Martz et al., 2009). Therefore, the fat talk gap may not be quite so large, as men and women may engage in different kinds of body talk. It has been demonstrated that men experience a substantial amount of body dissatisfaction (Muth & Cash, 1997). However, men experience such body dissatisfaction in a distinctly different way than women in that they may have concerns about being overweight *or* too thin. That is, men

diet and exercise to both lose and gain weight (Engeln, Sladek, & Waldron, 2013). Men experience much pressure to achieve muscularity and a toned body, and a study found that among U.S. college men, 90% wanted a more muscular physique (Frederick et al., 2007). In fact, Engeln, Sladek, and Waldron (2013) found that 25% of college men frequently engaged in body talk. In particular, the men in this study reported focusing on muscularity, and muscularity-focused talk was related to body dissatisfaction and eating disordered behaviors in men (Engeln, Sladek, and Waldron, 2013). These authors, though, used more open-ended measures in which participants wrote their own scripts for talking about their bodies, as well as a list of body parts in which respondents indicated how frequently they talked about each part (Engeln, Sladek, and Waldron, 2013). Fat talk was originally conceptualized in studies of women, and the method with which fat talk was measured in this study (NBT) reflects that focus. It is likely that the NBT scale did not adequately capture the nature and extent of men's fat talk. Although few past studies have examined body talk in men, no studies to date have assessed fat or body talk in men using a standardized measure (such as the NBT).

This study found that although there were no racial differences in fat talk with parents in the high school sample, more non-White undergraduates participated in total fat talk and fat talk expressing body concerns with their mothers than White undergraduates. This may have resulted from a lack of racial diversity in the samples (high school: 81.9% White, college: 81.7% White). Regardless, this is an interesting result as it has generally been accepted that non-White persons are less likely to internalize the Western thin ideal. It is known, though, that obesity is more prevalent among African Americans than Whites (Neumark-Sztainer, Story, & Faibisch, 1998). However, this does not readily translate to behaviors, as "restrictive dieting" is less prevalent among African Americans than Whites (Neumark-Sztainer, Story, & Faibisch, 264, 1998).

Researchers hold that African Americans tend to accept the status of overweight more so than other races, and there is therefore less stigmatization of overweight persons in the African American culture (Crago, Shislak, & Estes, 1996). Despite this cultural acceptance, it was found that exposure to weight stigmatization did not differ between African American and White adolescents, and that both groups faced weight bias from their peers and family (Neumark-Sztainer, Story, & Faibisch, 1998). Although the African American community may be somewhat more accepting of overweight than White culture, African Americans still experience weight bias. The perceived weight bias and discrimination most likely contribute to increased feelings of body dissatisfaction. Furthermore, some have hypothesized because African Americans have become accustomed to dealing with discrimination and stigma associated with their race, they may have developed better coping mechanisms to deal with weight bias. Perhaps the non-White respondents in this study used fat talk with parents as a coping mechanism to deal with perceived weight bias. However, it is still uncertain why the non-White undergraduates reported significantly greater reports of fat talk with mothers than White undergraduates.

It was also found that in the high school and undergraduate samples, men and women did not differ in their attitudes toward obesity. Such results support past findings that suggested that men and women are more similar in their levels of weight bias (Cramer & Steinwert, 1998; Tiggemann & Anesbury, 2000). This similarity may also be a result of the "leveling off" effect, in which adolescents and young adults exhibit more lenient attitudes toward overweight than children (Latner & Schwartz, 2005). If this effect occurred, it may be that as weight bias decreases, men and women's attitudes approach more similar levels. However, this study only examined attitudes toward overweight individuals, and it did not include questions pertaining to attitudes toward average weight people. It would have been interesting to examine whether

women held more negative attitudes toward average weight individuals than men, as this has been found in the past (Kraig & Keel, 2001).

Attitudes toward Obesity and Participation in Fat Talk with Parents: High School vs. College

Although high school students reported slightly more negative attitudes toward obesity than first year undergraduates, the attitudes were not statistically different between groups. Furthermore, these attitudes did not differ from previously published means of undergraduate students. This suggests that, despite the substantial life and attitude changes that occur during college years, individuals within the high school and college-age years share similar attitudes. It may be that attitudes toward obesity remain somewhat stable and consistent beginning in adolescence and lasting through adulthood. Perhaps there would have been a greater difference in ATOP scores between the two age groups if the undergraduates were fourth year students, as Latner and Schwartz (2005) demonstrated that negative attitudes tend to drop off beginning in adolescence. A longitudinal study examining how children's attitudes toward obesity develop and change throughout their childhood into early adulthood would be helpful in understanding the influence of age on weight bias.

The high school and undergraduate samples also did not differ in frequency of parental fat talk. Therefore, high school students and first year undergraduate students may be similar in this respect. In part, this may be due to the floor effects seen in NBT scores with parents. These floor effects may possibly be explained by high school students' and undergraduates' increasing independence from their parents and increasing reliance on their peers. Because both of these age groups are spending less time with their parents and more time with their peers, it makes sense that they both score relatively low on participation in fat talk with their parents. It would

have been interesting if I had administered an NBT scale assessing fat talk between peers so that I could compare scores between parents and peers. The length of the assessment and willingness of students to complete it precluded adding additional measures.

Fat Talk with Parents and High School and Undergraduate Students' Attitudes toward Obesity

It was predicted that reports of fat talk with parents, particularly mothers, would be associated with high school students' and undergraduates' more negative attitudes toward obesity. The results modestly support this hypothesis. Within the high school sample, a small negative relationship was found between ATOP scores and participation in fat talk with mothers and fathers, suggesting that the more high school students' engaged in fat talk with their mothers and fathers, the more negative their attitudes toward obese persons. A causal relationship, however, cannot be determined. Furthermore, gender and body concerns fat talk with mothers proved to be important in predicting high school students' attitudes toward obesity. When predicting attitudes toward obesity in women in high school, participation in body concerns fat talk with both mothers and fathers were important. Body concerns fat talk with parents accounted for ~7-16% of the variance in high school students' attitudes toward obesity. This is consistent with previous research in parents' influence on weight-related behaviors and attitudes (Haines et al., 2008), as the study found that parental behavior variables accounted for ~5-10% of the variance in child outcomes. Participation in fat talk with mothers appeared to be slightly more influential in predicting fat talk in women than talk with fathers, though, as the model using mothers' NBT scores explained more variance than the fathers. Participation in fat talk with mothers and fathers did not predict men's attitudes toward obesity.

Such results suggest that although parents' behaviors and comments may influence their children's attitudes, other factors, including peers, educators, and the media, may play a larger role. Furthermore, neither BMI nor athletic participation contributed to the models, suggesting that BMI and athletic participation are not important in predicting attitudes toward obesity in the present sample. This is consistent with prior research examining the relationship between BMI and attitudes toward overweight and obesity. For example, a number of studies have demonstrated that overweight children are just as likely to report negative attitudes about obesity as average weight children (Cramer & Steinwert, 1998; Kraig & Keel, 2001). Similar results are found in adults—BMI is not associated with individuals' ratings of overweight people (Davison & Birch, 2004; Tiggemann & Anesbury, 2000). Less research has examined attitudes toward obesity in athletes and non-athletes. However, one study found that rates of problems with eating behaviors and weight concerns in undergraduate athletes and non-athletes were similar (Gutgesell, Moreau, & Thompson, 2003). It may be that if athletes and non-athletes are similar in their weight concerns, they may also be similar in their attitudes toward obesity.

Within the first year undergraduate sample, participation in fat talk with mothers and BMI, and participation in fat talk with fathers and BMI predicted their children's attitudes toward obesity, with each model accounting for 7% of the variance in attitudes toward obesity. However, contrary to the high school sample, fat talk with mothers and fat talk with fathers were not significant predictors. This indicates that fat talk with parents is not an important correlate of attitudes toward obesity in undergraduate students. Rather, BMI appeared to be more important in predicting undergraduates' attitudes toward obesity. In this undergraduate sample, higher BMI was associated with more negative attitudes toward obesity. This was surprising, for one would think that those with higher BMIs would be more sympathetic toward overweight and

obesity. However, it may be that when individuals with higher BMIs were responding to questions about obese persons they considered their negative feelings about their own bodies, or that college environments in some way contribute to internalization of weight stigma. It was also interesting that although BMI was an important predictor in the undergraduate sample, it was not an important predictor in the high school sample. It was also interesting that fat talk moderately predicted negative attitudes toward obesity in high school students, but this relationship was not apparent in the undergraduate sample.

Parents' Anti-Fat Attitudes, Undergraduate Sample

I found that White parents reported more negative attitudes toward overweight teenagers and more dislike of overweight teenagers more than non-White parents. These results were consistent with prior research indicating that there are higher rates of acceptance of overweight and obesity within the African American culture, and that African Americans stigmatize overweight less (Neumark-Sztainer, Story, & Faibisch, 1998). However, Thompson and Sargent (2000) found that although White women reported significantly higher weight concerns than Black women, there were no racial differences in negative attitudes toward overweight persons. Such results may be indicative of the White culture's greater internalization of the thin ideal. Yet these results may also be attributed to the fact that the vast majority (81.7%) of responding parents were White.

Inconsistent with previous findings (Holub et al., 2011), mothers and fathers reported more anti-fat attitudes toward teenagers than they did toward adults, yet they reported disliking overweight adults more than they disliked overweight teens, which was consistent with previous findings. This discrepancy may possibly be accounted for in the AFA scale targeting teenagers. The third subscale within this particular measure (Blaming Parents) examines whether parents

believe that parents are responsible for teenagers' overweight. Although it is a subscale of and contributes to the total score of the AFA targeting teenagers, it does not measure weight bias against teenagers. Therefore, some of the total AFA score toward teenagers may reflect negative attitudes toward parents of overweight teenagers rather than toward teenagers. However, it may be that parents actually do hold greater anti-fat attitudes toward teens than they do toward adults. In this sample, fathers blamed teenagers more than their parents for teenagers' overweight, which is inconsistent with the results for mothers in the Holub et al. (2011) study. It may be that fathers are less understanding of youth's weight problems than they are for adults' weight issues. This may be because of the targets' age. Generally, as children age they are given more responsibility. Fathers may place more responsibility on teenagers than their parents because they believe that teenagers should be responsible for their weight at that age. Also, fathers may be more aware of the fact that there are many aspects of the environment that could contribute to a teenagers' weight for which parents have no control, such as school, food costs, and food availability. Last, there was a fairly small number of responding fathers in the sample (36), so the results should be interpreted with caution.

A Family Culture of Weight Bias?

As predicted, mothers' anti-fat attitudes toward overweight adults and teenagers were similar to those of fathers, which was not aligned with the study by O'Bryan, Fishbein, and Ritchey (2004), which found that the mother-father correlation for anti-fat attitudes was very weak (r = .06). Furthermore, mothers' and fathers' attitudes toward overweight adults were related to their attitudes toward overweight teenagers. Such results suggest the existence of a family culture of weight bias and negative attitudes toward overweight and obesity. This is important because parents' attitudes have been found to be influential and important in the

development and perpetuation of their children's weight bias (Haines et al., 2008, Holub et al., 2011). Research suggests parents' negative attitudes toward overweight and obesity can negatively influence their children's attitudes and behaviors. For example, children who reported that parents encouraged dieting, dieted themselves, and made comments about their own weight and their children's weight were more likely to experience body dissatisfaction, have weight concerns, and engage in dieting (Haines et al., 2008). It is likely, then, that children and adolescents will perceive and adopt their parents' weight bias, creating a family cycle of anti-fat attitudes.

Predicting Undergraduates' Attitudes toward Obesity from Parents' Anti-Fat Attitudes

It was hypothesized that, in accordance with previous research (Holub et al., 2011), both mothers' and fathers' anti-fat attitudes would be strongly associated with their children's attitudes toward obesity, and that they would predict their children's weight bias. In this study, mothers' anti-fat attitudes toward teenagers and mothers' and fathers' dislike of overweight teenagers were associated with undergraduates' negative attitudes toward obesity. Fathers' anti-fat attitudes toward adults and teenagers, and mothers' anti-fat attitudes toward adults did not predict their children's attitudes toward obese persons. This was consistent with results of Holub et al. (2011), which found that mothers' anti-fat attitudes toward adults did not predict their children's weight bias. This makes sense, as teenagers may not hear or notice negative comments made by their parents about overweight adults, as that is less relevant and salient to them than comments about teenagers. Similarly, in Holub et al., mothers' attitudes toward childhood obesity were the best predictor of bias in their children. In particular, the authors found that mothers' dislike of overweight children was most strongly associated with their children's attitudes toward overweight. Parallel results were found in the current study.

Mothers' and fathers' dislike of overweight teenagers predicted their children's weight bias, accounting for ~20-22% of the variance. Furthermore, when examining only undergraduate men, mothers' anti-fat attitudes toward teens and men's BMI predicted their attitudes toward obese persons. It may be that mothers' anti-fat attitudes are particularly influential to their undergraduate sons' attitude formation. However, it is important to note that there were only 33 undergraduate male respondents in the current study; therefore, it is difficult to draw conclusions. These models accounted for substantially more variance in attitudes toward obesity than fat talk models.

The results suggested that parents' attitudes are important in the development of their children's attitudes toward overweight and obese persons. Fat talk with parents, however, is most likely not a method through which their attitudes are being transmitted from parents to college-aged children. However, fat talk with parents may play a role in attitude transmission from parents to their high-school aged children. It is likely that high school and undergraduate students perceive and pick up on their parents' attitudes in ways other than fat talk, including parents' weight-related behaviors (dieting and exercising to lose weight) and non-fat talk comments about themselves and others. Furthermore, it has been demonstrated that peers and the media play important roles in the transmission and perpetuation of weight bias and weight-related values (Bissell & Hays, 2011; Haines et al., 2008).

Implications, Limitations, and Future Directions

This study provides insight into parents' roles in transmitting weight bias to their high school and undergraduate children. Although the exact mechanisms with which this occurs is still relatively unknown, it has been demonstrated that parents' attitudes are strongly associated with their children's attitudes toward obesity. This could have important implications in the

development of intervention programs to reduce weight bias in children and adolescents. That is, interventions might include both parents and children, as parents are important in the transmission of weight bias. Parents should be educated about their role in the development of their children's attitudes toward weight, and that children may pick up on even subtle behaviors and comments.

There were a number of limitations in the current study. To start, all measures were explicit and self-report, including height and weight. It may be that some respondents were not honest in their reporting. Because larger weights are less socially accepted, respondents may not have been accurate in reporting weight. Morrison and O'Connor (1999) found that the AFA questionnaire may be influenced by social desirability, for individuals do not want to think of themselves or be perceived as discriminatory. It may be helpful, then, to use implicit measures of anti-fat attitudes in future research. Also, I adapted the AFA target from "child" in a previous study (Holub et al., 2011) to "teenager." The AFA scale toward teenagers had never been used, and it is uncertain whether this is a reliable measure. In addition, self-selection may have occurred in the undergraduate sample. Participation was voluntary, and participants were provided a brief description of the study before consenting to take part in the study. As a result, those who chose to participate may have been particularly interested in fat talk and/or weight bias.

Further, because the design of the study is correlational, I cannot draw firm conclusions about fat talk and parents' anti-fat attitudes causing negative attitudes toward the overweight. In the fat talk measure, this study did not distinguish between whether the parents were initiating the fat talk, or whether their children were. Therefore, I do not know if high school students and undergraduates reported what they said or what their mothers and fathers said. Also, it appears

that the fat talk (NBT) scale used in this study did not adequately assess men's body talk. Future research should address the making of a measure that is similar to the NBT and that would more accurately capture the kind of body talk in which men generally partake so that gender comparisons could be made. As men are more likely to participate in a more positive kind of body talk, it may be that participation in such may lead to more acceptance of overweight. Additionally, this study used a cross-sectional design. A longitudinal study, following a group of adolescents from high school throughout college would be beneficial to study how attitudes may change during this time. Also, this sample was not very racially diverse, and it is difficult to draw conclusions about differences between races in terms of fat talk and attitudes toward obesity. Future research should explore potential differences between races in attitudes toward obesity and fat talk in parents and their children.

Last, the two studies included a number of variables and sub-scales, and a variety of analyses were run to test for associations. Although analyses were based on a priori hypotheses, Type I error may have affected outcomes. Although a Bonferroni correction could have been applied in each study, the exploratory nature of the research argued against this more conservative approach.

In summary, this study examined the roles of fat talk with parents and parents' attitudes toward overweight and obesity in relation to their high school and first year college-aged children's attitudes toward obesity. Results indicated that although fat talk with parents may be not be important in the transmission or perpetuation of weight bias from parents to their children during college years, it may be important to children during their high school years. Furthermore, parents' anti-fat attitudes about dislike for teenagers were more strongly associated with undergraduates' negative attitudes toward obesity than parents' anti-fat attitudes toward

adults. This suggested that undergraduates pick up on parental attitudes that are more relevant and salient to their lives. Gaining a better understanding of where weight bias comes and the methods with which it is transmitted is important, as weight bias and stigmatization perpetrated against overweight individuals can have harmful and far-reaching effects (Puhl & Heuer, 2010; Puhl & Latner, 2007). Such information will be helpful in developing weight bias reduction programs, specifically targeting parents, and in preventing weight bias in children.

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Appendix A

Student and Parent Consent Forms

Consent Form for Parents for Daughters'/Sons' Participation

This consent form was created for use at Bates College (Lewiston, Maine). The purpose of the study you have agreed to allow your daughter/son to complete is to study weight bias in parents and their children. Your daughter/son will be asked to complete a survey that should take no more than 25 minutes. Occasionally when individuals complete measures about weight bias or conversations about weight, they feel mild discomfort. Your daughter/son may end participation at any time; her participation is entirely voluntary.

Her/his participation in this study is completely confidential. There will be no record of her/his name associated with her data. The data will be available to only the researcher. If you have any questions, they will be answered by Stephanie Sprague (sspragu2@bates.edu) or Professor Kathy Low, Ph.D. (klow@bates.edu). After consenting to your daughter's/son's participation, she/he will be presented with the survey.

I have read the above information and have been informed of the procedure in this experiment. I understand that my daughter/son may withdraw from the experiment at any time without penalty. By signing my name below, I agree to her/his participation in the study as described above.

X_____

Consent Form for Parents

This consent form was created for use at Bates College (Lewiston, Maine). The purpose of the study you have agreed to complete is to study weight bias in parents and their children. You will be asked to complete a survey that should take no more than 25 minutes. Occasionally when individuals complete measures about weight bias, they feel mild discomfort. You may end participation at any time; your participation is entirely voluntary.

Your participation in this study is completely confidential. There will be no record of your name associated with your data. The data will be available to only the researcher. If you have any questions, they will be answered by Stephanie Sprague (sspragu2@bates.edu) or Professor Kathy Low, Ph.D. (klow@bates.edu). After consenting to your participation, you will be presented with the survey.

I have read the above information and been informed of the procedure in this experiment. I understand that I may withdraw from the experiment at any time without penalty. By signing my name below, I agree to participate in the study as described above.

X_____

Appendix B

Parent Survey

Q. Gender
What is your gender?
_____ Male

_____ Female

Q. Age
What is your age?
_____ years

Q. Height
What is your height in feet and inches?
____ ft. ____ in.

Q. Weight
What is your weight in pounds?
_____ lbs

Q. Race
Please specify your race.
_____ American Indian or Alaska Native

_____ Asian

_____ Black or African American

_____ Native Hawaiian or Other Pacific Islander

_____ White

Q. Coding Number
What are the last four digits of your home phone number? (This will be used only to link your information with that of your daughter/son.)

_____

Instructions: The following questions are concerned with how you perceive yourself across a variety of issues. Please mark each statement below in the left margin, according to how much you agree or disagree with it. Please do not leave any blank. Use the numbers on the following scale to indicate your response.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

_____ 1. I really don't like fat people much.

_____ 2. I don't have many friends that are fat.

_____ 3. I tend to think that people who are overweight are a little untrustworthy.

_____ 4. Although some fat people are surely smart, in general, I think they tend not to be as bright as normal weight people.

_____ 5. I have a hard time taking fat people too seriously.

_____ 6. Fat people make me somewhat uncomfortable.

_____ 7. If I were an employer looking to hire, I might avoid hiring a fat person.

_____ 8. I feel disgusted with myself when I gain weight.

_____ 9. One of the worst things that could happen to me would be if I gained 25 pounds.

_____ 10. I worry about becoming fat.

_____ 11. People who weigh too much could lose at least some part of their weight through exercise.

_____ 12. Some people are fat because they have no willpower.

_____ 13. Fat people tend to be fat pretty much through their own fault.

Instructions: The following questions are concerned with how you perceive teens across a variety of issues. Please mark each statement below in the left margin, according to how much you agree or disagree with it. Please do not leave any blank. Use the numbers on the following scale to indicate your response.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

_____ 1. I don't really like fat teens that much.

_____ 2. I don't like my teen to have friends that are fat.

_____ 3. I tend to think that teens who are overweight are a little untrustworthy.

_____ 4. Fat teens tend to be fat pretty much through their own fault.

_____ 5. Teens who weigh too much could lose at least some of their weight through a little exercise.

_____ 6. Some teens are fat because they have no willpower.

_____ 7. Some teens are overweight because they'd rather not go outside and be active.

_____ 8. If teens are overweight, it is pretty much their parents' fault.

_____ 9. Some teens are overweight because their parents feed them too much.

_____ 10. Some teens are overweight because their parents don't encourage them to exercise.

Appendix C

Student Survey

Q. Age
What is your age?
_____ years

Q. Sex
Do you identify yourself as male or female?
_____

Q. Height
What is your height in feet and inches?
____ ft. ____ in.

Q. Weight
What is your weight in pounds?
_____ lbs

Q. Race
Please specify your race.
_____ American Indian or Alaska Native

_____ Asian

_____ Black or African American

_____ Native Hawaiian or Other Pacific Islander

_____ White

Q. Coding Number
What are the last four digits of your home phone number? (This will be used only to link your information with that of your parents.)

_____

Instructions: Please mark each statement below in the left margin, according to how much you agree or disagree with it. Please do not leave any blank. Use the numbers on the following scale to indicate your response. Be sure to place a minus or plus sign (- or +) beside the number that you choose to show whether you agree or disagree.

I strongly disagree	I moderately disagree	I slightly disagree	I slightly agree	I moderately agree	I strongly agree

-3 -2 -1 +1 +2 +3

1. _____ Obese people are as happy as nonobese people.

2. _____ Most obese people feel that they are not as good as other people.

3. _____ Most obese people are more self-conscious than other people.

4. _____ Obese workers cannot be as successful as other workers.

5. _____ Most nonobese people would not want to marry anyone who is obese.

6. _____ Severely obese people are usually untidy.

7. _____ Obese people are usually sociable.

8. _____ Most obese people are not dissatisfied with themselves.

9. _____ Obese people are just as self-confident as other people.

10. _____ Most people feel uncomfortable when they associate with obese people.

11. _____ Obese people are often less aggressive than nonobese people.

12. _____ Most obese people have different personalities than nonobese people.

13. _____ Very few obese people are ashamed of their weight.

14. _____ Most obese people resent normal weight people.

15. _____ Obese people are more emotional than nonobese people.

16. _____ Obese people should not expect to lead normal lives.

17. _____ Obese people are just as healthy as nonobese people.

18. _____ Obese people are just as sexually attractive as nonobese people.

19. _____ Obese people tend to have family problems.

20. _____ One of the worst things that could happen to a person would be for him to become obese.

When talking with your **mother**, how often do you say things like…

Remember, we're not interested in how often you have **thoughts** like this. Instead, we're interested in how often you **say** things like this out loud when you're with your mother. Even if

you wouldn't use these exact words, we're interested in whether you say similar things (that mean the same thing) when you're with your mother.

When talking with your **mother**, how often do you say things like….

1	2	3	4	5	6	7
never	rarely	occasionally	sometimes	frequently	usually	always

1. _____ I wish my body looked like hers/his.[b]

2. _____ I need to go on a diet.[a]

3. _____ I feel fat.[a]

4. _____ S/he has a perfect stomach.[b]

5. _____ This outfit makes me look fat.[a]

6. _____ Why can't my body look like hers/his?[b]

7. _____ S/he has a perfect body.[b]

8. _____ I need to start watching what I eat.[a]

9. _____ S/he's in such good shape.[b]

10. _____ I wish I was thinner.[a]

11. _____ I wish my abs looked like hers/his.[b]

12. _____ I think I'm getting fat.[a]

13. _____ You never have to worry about gaining weight.[a]

[a]Body concerns subscale. [b]Body comparison subscale.

When talking with your **father**, how often do you say things like…

Remember, we're not interested in how often you have **thoughts** like this. Instead, we're interested in how often you **say** things like this out loud when you're with your father. Even if you wouldn't use these exact words, we're interested in whether you say similar things (that mean the same thing) when you're with your father.

When talking with your **father**, how often do you say things like….

1	2	3	4	5	6	7
never	rarely	occasionally	sometimes	frequently	usually	always

1. _____ I wish my body looked like hers/his.[b]

2. _____ I need to go on a diet.[a]

3. _____ I feel fat.[a]

4. _____ S/he has a perfect stomach.[b]

5. _____ This outfit makes me look fat.[a]

6. _____ Why can't my body look like hers/his?[b]

7. _____ S/he has a perfect body.[b]

8. _____ I need to start watching what I eat.[a]

9. _____ S/he's in such good shape.[b]

10. _____ I wish I was thinner.[a]

11. _____ I wish my abs looked like hers/his.[b]

12. _____ I think I'm getting fat.[a]

13. _____ You never have to worry about gaining weight.[a]

[a]Body concerns subscale. [b]Body comparison subscale.

Appendix D

Debriefing Form

This study is concerned with the transmission of weight bias and negative attitudes toward overweight people from mothers and fathers to their teenage children. It is also concerned with how "fat talk," or the "ritualistic conversations about one's own and others' bodies" may be a method through which this transmission occurs (Arroyo & Harwood, 2012, 167). We expect to find that both parents' negative attitudes towards overweight and obesity will be associated with their daughters' overweight stereotypes. However, it may be that the influence of mothers' attitudes is greater than that of fathers'. It is also hypothesized that adolescents' reports of "fat talk" from their parents will be associated with negative attitudes toward overweight, but we believe that mothers' "fat talk" will be reported as more frequently occurring than fathers' "fat talk." This would indicate that mothers play a larger role in the transmission of weight bias through "fat talk" than fathers.

If you have any concerns that you would like to discuss with someone, Lewiston and Auburn schools offer a health care team led by Marion Doyle, LCSW (mdoyle@auburnschl.edu, Monday, Tuesday, & Wednesday: 783-3984, ext. 2343; Thursday & Friday: 783-6827, ext. 2720).

If you are interested in learning more about this research, or if you would like to receive a report or summary of this research when it is completed, please contact Stephanie Sprague at sspragu2@bates.edu or 978-618-2188.

Thank you again for your participation.